

## APPENDIX A

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### **NOTE ON THE CHILDHOOD/ADOLESCENT IMMUNIZATION SCHEDULE**


In October 2003, the Advisory Committee on Immunization Practices voted to routinely recommend influenza vaccine for children 6-23 months of age, as opposed to “encouraging” the vaccine for these children as it has done since 2002.

The ACIP, AAP and AAFP plan to publish two harmonized schedules in 2004. The first of these (January - June) is on the next page, and does not reflect the new influenza vaccine recommendation. The second (July - December) will be published later in the year and will include this recommendation. There should not be any other substantive changes.

The most recent Recommended Childhood and Adolescent Immunization Schedule can always be found on the National Immunization Program’s web-site at <http://www.cdc.gov/nip/recs/child-schedule.htm>.

## Recommended Childhood and Adolescent Immunization Schedule — United States, January – June 2004

Vaccine	Age	Range of Recommended Ages				Catch-up Immunization				Preadolescent Assessment			
		Birth	1 mo	2 mo	4 mo	6 mo	12 mo	15 mo	18 mo	24 mo	4-6 y	11-12 y	13-18 y
Hepatitis B <sup>1</sup>		HepB #1	only if mother HBsAg (-)	HepB #2		HepB #3					HepB series		
Diphtheria, Tetanus, Pertussis <sup>2</sup>				DTaP	DTaP	DTaP		DTaP			DTaP	Td	Td
<i>Haemophilus influenzae</i> Type b <sup>3</sup>				Hib	Hib	Hib <sup>3</sup>	Hib						
Inactivated Poliovirus				IPV	IPV		IPV				IPV		
Measles, Mumps, Rubella <sup>4</sup>							MMR #1				MMR #2	MMR #2	
Varicella <sup>5</sup>							Varicella				Varicella		
Pneumococcal <sup>6</sup>				PCV	PCV	PCV	PCV			PCV	PPV		
Vaccines below this line are for selected populations													
Hepatitis A <sup>7</sup>											Hepatitis A series		
Influenza <sup>8</sup>											Influenza (yearly)		

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2003, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible.  Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: <http://www.vaers.org/> or by calling 1-800-822-7967.

**1. Hepatitis B (HepB) vaccine.** All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose may also be given by age 2 months if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent HepB can be used for the birth dose. Monovalent or combination vaccine containing HepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The second dose should be given at least 4 weeks after the first dose, except for combination vaccines which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 24 weeks.

Infants born to HBsAg-positive mothers should receive HepB and 0.5 mL of Hepatitis B Immune Globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9 to 15 months.

Infants born to mothers whose HBsAg status is unknown should receive the first dose of the HepB series within 12 hours of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). The second dose is recommended at age 1 to 2 months. The last dose in the immunization series should not be administered before age 24 weeks.

**2. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine.** The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15 to 18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11 to 12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

**3. *Haemophilus influenzae* type b (Hib) conjugate vaccine.** Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB or ComVax [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters following any Hib vaccine. The final dose in the series should be given at age ≥12 months.

**4. Measles, mumps, and rubella vaccine (MMR).** The second dose of MMR is recommended routinely at age 4 to 6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by the 11- to 12-year-old visit.

**5. Varicella vaccine.** Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons age ≥13 years should receive 2 doses, given at least 4 weeks apart.

**6. Pneumococcal vaccine.** The heptavalent pneumococcal conjugate vaccine (PCV) is recommended for all children age 2 to 23 months. It is also recommended for certain children age 24 to 59 months. The final dose in the series should be given at age ≥12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-38.

**7. Hepatitis A vaccine.** Hepatitis A vaccine is recommended for children and adolescents in selected states and regions and for certain high-risk groups; consult your local public health authority. Children and adolescents in these states, regions, and high-risk groups who have not been immunized against hepatitis A can begin the hepatitis A immunization series during any visit. The 2 doses in the series should be administered at least 6 months apart. See *MMWR* 1999;48(RR-12):1-37.

**8. Influenza vaccine.** Influenza vaccine is recommended annually for children age ≥6 months with certain risk factors (including but not limited to children with asthma, cardiac disease, sickle cell disease, human immunodeficiency virus infection, and diabetes; and household members of persons in high-risk groups [see *MMWR* 2003;52(RR-8):1-36]) and can be administered to all others wishing to obtain immunity. In addition, healthy children age 6 to 23 months are encouraged to receive influenza vaccine if feasible, because children in this age group are at substantially increased risk of influenza-related hospitalizations. For healthy persons age 5 to 49 years, the intranasally administered live-attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2003;52(RR-13):1-8. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if age 6 to 35 months or 0.5 mL if age ≥3 years). Children age ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at [www.cdc.gov/nip/](http://www.cdc.gov/nip/) or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices ([www.cdc.gov/nip/acip/](http://www.cdc.gov/nip/acip/)), the American Academy of Pediatrics ([www.aap.org/](http://www.aap.org/)), and the American Academy of Family Physicians ([www.aafp.org/](http://www.aafp.org/)).

## For Children and Adolescents Who Start Late or Who Are >1 Month Behind

The tables below give catch-up schedules and minimum intervals between doses for children who have delayed immunizations. There is no need to restart a vaccine series regardless of the time that has elapsed between doses. Use the chart appropriate for the child's age.

**Catch-up schedule for children age 4 months through 6 years**

Dose 1 (Minimum Age)	Minimum Interval Between Doses			
	Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
DTaP (6 wk)	4 wk	4 wk	6 mo	6 mo <sup>1</sup>
IPV (6 wk)	4 wk	4 wk	4 wk <sup>2</sup>	
HepB <sup>3</sup> (birth)	4 wk	8 wk (and 16 wk after first dose)		
MMR (12 mo)	4 wk <sup>4</sup>			
Varicella (12 mo)				
Hib <sup>5</sup> (6 wk)	4 wk: if first dose given at age <12 mo  8 wk (as final dose): if first dose given at age 12-14 mo  No further doses needed: if first dose given at age ≥15 mo	4 wk <sup>6</sup> : if current age <12 mo  8 wk (as final dose) <sup>6</sup> : if current age ≥12 mo and second dose given at age <15 mo  No further doses needed: if previous dose given at age ≥15 mo	8 wk (as final dose): this dose only necessary for children age 12 mo-5 y who received 3 doses before age 12 mo	
PCV <sup>7</sup> : (6 wk)	4 wk: if first dose given at age <12 mo and current age <24 mo  8 wk (as final dose): if first dose given at age ≥12 mo or current age 24-59 mo  No further doses needed: for healthy children if first dose given at age ≥24 mo	4 wk: if current age <12 mo  8 wk (as final dose): if current age ≥12 mo  No further doses needed: for healthy children if previous dose given at age ≥24 mo	8 wk (as final dose): this dose only necessary for children age 12 mo-5 y who received 3 doses before age 12 mo	

**Catch-up schedule for children age 7 through 18 years**

Minimum Interval Between Doses		
Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Booster Dose
Td: 4 wk	Td: 6 mo	Td <sup>8</sup> : 6 mo: if first dose given at age <12 mo and current age <11 y 5 y: if first dose given at age ≥12 mo and third dose given at age <7 y and current age ≥11 y 10 y: if third dose given at age ≥7 y
IPV <sup>9</sup> : 4 wk	IPV <sup>9</sup> : 4 wk	IPV <sup>2,9</sup>
HepB: 4 wk	HepB: 8 wk (and 16 wk after first dose)	
MMR: 4 wk		
Varicella <sup>10</sup> : 4 wk		

1. **DTaP:** The fifth dose is not necessary if the fourth dose was given after the fourth birthday.
2. **IPV:** For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was given at age ≥4 years. If both OPV and IPV were given as part of a series, a total of 4 doses should be given, regardless of the child's current age.
3. **HepB:** All children and adolescents who have not been immunized against hepatitis B should begin the HepB immunization series during any visit. Providers should make special efforts to immunize children who were born in, or whose parents were born in, areas of the world where hepatitis B virus infection is moderately or highly endemic.
4. **MMR:** The second dose of MMR is recommended routinely at age 4 to 6 years but may be given earlier if desired.
5. **Hib:** Vaccine is not generally recommended for children age ≥5 years.
6. **Hib:** If current age <12 months and the first 2 doses were PRP-OMP (PedvaxHIB or ComVax [Merck]), the third (and final) dose should be given at age 12 to 15 months and at least 8 weeks after the second dose.
7. **PCV:** Vaccine is not generally recommended for children age ≥5 years.
8. **Td:** For children age 7 to 10 years, the interval between the third and booster dose is determined by the age when the first dose was given. For adolescents age 11 to 18 years, the interval is determined by the age when the third dose was given.
9. **IPV:** Vaccine is not generally recommended for persons age ≥18 years.
10. **Varicella:** Give 2-dose series to all susceptible adolescents age ≥13 years.

### Reporting Adverse Reactions

Report adverse reactions to vaccines through the federal Vaccine Adverse Event Reporting System. For information on reporting reactions following immunization, please visit [www.vaers.org](http://www.vaers.org) or call the 24-hour national toll-free information line (800) 822-7967.

### Disease Reporting

Report suspected cases of vaccine-preventable diseases to your state or local health department.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at [www.cdc.gov/nip](http://www.cdc.gov/nip) or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

TABLE 1. Recommended and minimum ages and intervals between vaccine doses\*

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
Hepatitis B1†	Birth–2 mos	Birth	1–4 mos	4 wks
Hepatitis B2	1–4 mos	4 weeks	2–17 mos	8 wks
Hepatitis B3§	6–18 mos	6 mos¶	—	—
Diphtheria and tetanus toxoids and acellular pertussis (DTaP)1	2 mos	6 wks	2 mos	4 wks
DTaP2	4 mos	10 wks	2 mos	4 wks
DTaP3	6 mos	14 wks	6–12 mos	6 mos***
DTaP4	15–18 mos	12 mos	3 yrs	6 mos¶
DTaP5	4–6 yrs	4 yrs	—	—
<i>Haemophilus influenzae</i> , type b (Hib)1††	2 mos	6 wks	2 mos	4 wks
Hib2	4 mos	10 wks	2 mos	4 wks
Hib3§§	6 mos	14 wks	6–9 mos	8 wks
Hib4	12–15 mos	12 mos	—	—
Inactivated poliovirus vaccine (IPV)1	2 mos	6 wks	2 mos	4 wks
IPV2	4 mos	10 wks	2–14 mos	4 wks
IPV3	6–18 mos	14 wks	3.5 yrs	4 wks
IPV4	4–6 yrs	18 wks	—	—
Pneumococcal conjugate vaccine (PCV)1††	2 mos	6 wks	2 mos	4 wks
PCV2	4 mos	10 wks	2 mos	4 wks
PCV3	6 mos	14 wks	6 mos	8 wks
PCV4	12–15 mos	12 mos	—	—
Measles, mumps, and rubella (MMR)1	12–15 mos¶¶	12 mos	3–5 yrs	4 wks
MMR2	4–6 yrs	13 mos	—	—
Varicella***	12–15 mos	12 mos	4 wks***	4 wks***
Hepatitis A1	≥2 yrs	2 yrs	6–18 mos¶	6 mos¶
Hepatitis A2	≥30 mos	30 mos	—	—
Influenza†††	—	6 mos¶	1 mo	4 wks
pneumococcal polysaccharide (PPV)1	—	2 yrs	5 yrs§§§	5 yrs
PPV2	—	7 yrs§§§	—	—

\* Combination vaccines are available. Using licensed combination vaccines is preferred over separate injections of their equivalent component vaccines (Source: CDC. Combination vaccines for childhood immunization: recommendations of the Advisory Committee on Immunization Practices [ACIP], the American Academy of Pediatrics [AAP], and the American Academy of Family Physicians [AAFP]. MMWR 1999;48[No. RR-5]:5). When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components; the minimum interval between doses is equal to the greatest interval of any of the individual antigens.

† A combination hepatitis B-Hib vaccine is available (Comvax®, manufactured by Merck Vaccine Division). This vaccine should not be administered to infants aged <6 weeks because of the Hib component.

§ Hepatitis B3 should be administered ≥8 weeks after Hepatitis B2 and 16 weeks after Hepatitis B1, and it should not be administered before age 6 months.

¶ Calendar months.

\*\* The minimum interval between DTaP3 and DTaP4 is recommended to be ≥6 months. However, DTaP4 does not need to be repeated if administered ≥4 months after DTaP3.

†† For Hib and PCV, children receiving the first dose of vaccine at age ≥7 months require fewer doses to complete the series (see CDC. *Haemophilus b* conjugate vaccines for prevention of *Haemophilus influenzae*, type b disease among infants and children two months of age and older: recommendations of the ACIP. MMWR 1991;40[No. RR-1]:1–7, and CDC. Preventing pneumococcal disease among infants and young children: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 2000;49[No. RR-9]:1–35).

§§ For a regimen of only polyribosylribitol phosphate-meningococcal outer membrane protein (PRP-OMP, PedvaxHib®, manufactured by Merck), a dose administered at age 6 months is not required.

¶¶ During a measles outbreak, if cases are occurring among infants aged <12 months, measles vaccination of infants aged ≥6 months can be undertaken as an outbreak control measure. However, doses administered at age <12 months should not be counted as part of the series (Source: CDC. Measles, mumps, and rubella — vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1998;47[No. RR-8]:1–57).

\*\*\* Children aged 12 months–13 years require only one dose of varicella vaccine. Persons aged ≥13 years should receive two doses separated by ≥4 weeks.

††† Two doses of inactivated influenza vaccine, separated by 4 weeks, are recommended for children aged 6 months–9 years who are receiving the vaccine for the first time. Children aged 6 months–9 years who have previously received influenza vaccine and persons aged ≥9 years require only one dose per influenza season.

§§§ Second doses of PPV are recommended for persons at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration. Revaccination 3 years after the previous dose can be considered for children at highest risk for severe pneumococcal infection who would be aged <10 years at the time of revaccination (see CDC. Prevention of pneumococcal disease: recommendations of the Advisory Committee on Immunization Practices [ACIP]. MMWR 1997;46[No. RR-8]:1–24).



## Suggested intervals between administration of immune globulin preparations for different indications and measles-containing vaccine and varicella vaccine\*

Product/Indication	Dose, including mg immunoglobulin G (IgG)/kg body weight*	Suggested interval before Measles or Varicella Vaccination
RSV monoclonal antibody (Synagis™)§	15 mg/kg intramuscularly (IM)	None
Tetanus (TIG)	250 units (10 mg IgG/kg) IM	3 months
Hepatitis A (IG)		
Contact prophylaxis	0.02 mL/kg (3.3 mg IgG/kg) IM	3 months
International travel	0.06 mL/kg (10 mg IgG/kg) IM	3 months
Hepatitis B IG	0.06 mL/kg (10 mg IgG/kg) IM	3 months
Rabies IG	20 IU/kg (22 mg IgG/kg) IM	4 months
Varicella IG	125 units/10kg (20–40 mg IgG/kg) IM (maximum 625 units)	5 months
Measles prophylaxis IG		
Standard (i.e., nonimmunocompromised contact)	0.25 mL/kg (40 mg IgG/kg) IM	5 months
Immunocompromised contact	0.50 mL/kg (80 mg IgG/kg) IM	6 months
Blood transfusion		
Red blood cells (RBCs), washed	10 mL/kg negligible IgG/kg intervenously (IV)	None
RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3 months
Packed RBCs (Hct 65%)*	10 mL/kg (60 mg IgG/kg) IV	6 months
Whole blood (Hct 35–50%)*	10 mL/kg (80–100 mg IgG/kg) IV	6 months
Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7 months
Cytomegalovirus intravenous immune globulin (IGIV)	150 mg/kg maximum	6 months
Respiratory syncytial virus prophylaxis IGIV	750 mg/kg	9 months
Replacement therapy for immune deficiencies†		
Immune thrombocytopenic purpura	300–400 mg/kg IV†	8 months
Immune thrombocytopenic purpura	400 mg/kg IV	8 months
Kawasaki disease	1000 mg/kg IV	10 months
	2 grams/kg IV	11 months

\*This table is not intended for determining the correct indications and dosage for using immune globulin products. Unvaccinated persons might not be fully protected against measles during the entire recommended interval, and additional doses of immune globulin and/or measles vaccine might be indicated after measles exposure. Concentrations of measles antibody in an immune globulin preparation can vary by manufacturer's lot. Rates of antibody clearance after receipt of an immune globulin preparation might vary also. Recommended intervals are extrapolated from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.

(Source: Mason W, Takahashi M, Schneider T. Persisting passively acquired measles antibody following gamma globulin therapy for Kawasaki disease and response to live virus vaccination [Abstract 311]. Presented at the 32<sup>nd</sup> meeting of the Interscience Conference on Antimicrobial Agents and Chemotherapy, Los Angeles, California, October, 1992.)

§Contains antibody only to respiratory syncytial virus (RSV)

†Assumes a serum IgG concentration of 16 mg/mL.

‡Measles and varicella vaccination is recommended for children with asymptomatic or mildly symptomatic human immunodeficiency virus (HIV) infection but is contraindicated for persons with severe immunosuppression from HIV or any other immunosuppressive disorder.

From ACIP "General Recommendations on Immunization" February 8, 2002

## Summary of ACIP Recommendations on Immunization of Immunocompromised Infants and Children

Vaccine	Routine (not Immunocompromised)	HIV Infection/ AIDS	Severely Immunocompromised (non-HIV Related)*			
			Asplenia	Renal Failure	Diabetes	
Routine Infant Immunizations						
DTaP (DT/T/Td)	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Hepatitis B	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Hib	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
IPV	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
MMR (MR/M/R)	Recommended	Recommended/ Consider <sup>§</sup>	Recommended	Recommended	Recommended	Recommended
Pneumococcal (PCV7)	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Varicella	Recommended	Consider <sup>†</sup>	Recommended	Recommended	Recommended	Recommended
Other Childhood Immunizations						
Hepatitis A	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Influenza (inactivated)	Use if Indicated	Recommended	Recommended	Recommended	Recommended	Recommended
Influenza (LAIV)	Use if Indicated	Contraindicated	Contraindicated	Use if Indicated	Contraindicated	Contraindicated
Pneumococcal (PPV23) <sup>‡</sup>	Use if Indicated	Recommended	Recommended	Recommended	Recommended	Recommended

\* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ MMR vaccination is recommended for all **asymptomatic** HIV-infected persons who do not have evidence of severe immunosuppression (for definition, see 2000 AAP Red Book, Table 3.25, p. 329) for whom measles vaccination would otherwise be indicated. MMR vaccination should be considered for all **symptomatic** HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

† Two doses of varicella vaccine should be considered for asymptomatic or mildly symptomatic HIV-infected children, specifically children in CDC class N1 or A1 (see "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 3 footnote), with age-specific T cell percentages of 25% or higher.

‡ Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems.

Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impaired humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17).

Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

Varicella vaccine should not be administered to persons receiving immunosuppressive therapy (except children who have ALL in remission, as noted above, or persons receiving corticosteroid-replacement therapy).

‡ Children who have completed the PCV7 vaccination series before age 2 years and who are among risk groups for which PPV23 is already recommended should receive one dose of PPV23 at age 2 years (>2 months after the last dose of PCV7). These groups at high risk include children with SCD, children with functional or anatomic asplenia, children who are HIV-infected, and children who have immunocompromising or chronic diseases.

This table is based on Table 1 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

## Summary of ACIP Recommendations on Immunization of Immunocompromised Adults

Vaccine	Routine (not Immunocompromised)	HIV Infection/ AIDS	Severely Immunocompromised (non-HIV Related)*	Post-Solid Organ Transplant or Chronic Therapy		Renal Failure	Diabetes	Alcoholism and Alcoholic Cirrhosis
				Immunosuppressive	Asplenia			
Hepatitis B	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Recommended <sup>§</sup>	Use if Indicated	Use if Indicated
Hib	Not Recommended	Consider <sup>†</sup>	Recommended	Recommended	Recommended	Use if Indicated	Use if Indicated	Use if Indicated
Influenza (inactivated)	Recommended if ≥50 years of age	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Influenza (LAIV)	Use if Indicated	<b>Contraindicated</b>	<b>Contraindicated</b>	<b>Contraindicated</b>	Use if Indicated	<b>Contraindicated</b>	<b>Contraindicated</b>	<b>Contraindicated</b>
MMR (MR/MMR)	Use if Indicated	Recommended/ Consider <sup>†</sup>	<b>Contraindicated</b>	<b>Contraindicated</b>	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Meningococcal	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated	Recommended	Use if Indicated	Use if Indicated	Use if Indicated
Pneumococcal (PPV)	Recommended if ≥65 years of age	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Td	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended	Recommended
Varicella	Use if Indicated	<b>Contraindicated</b>	See Note <sup>‡</sup>	<b>Contraindicated</b>	Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated

\* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ Patients with renal failure on dialysis should have their anti-HBs response tested after vaccination, and those found not to respond should be revaccinated.

† Clinicians deciding whether to administer Hib vaccine to HIV-infected persons should take into consideration the individual patient's risk of Hib disease and the effectiveness of the vaccine for these persons. In some settings, the incidence of Hib disease may be higher among HIV-infected adults than non-HIV-infected adults, and the disease can be severe in these patients.

<sup>1</sup> MMR vaccination is recommended for all **asymptomatic** HIV-infected persons who do not have evidence of severe immunosuppression (for definition, see 2000 AAP Red Book, Table 3.25, p. 329) for whom measles vaccination would otherwise be indicated. MMR vaccination should be considered for all **symptomatic** HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

<sup>‡</sup> Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems. Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impaired humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients <18 years of age with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17). Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

This table is based on Table 2 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

## Summary of ACIP Recommendations on Nonroutine Immunization of Immunocompromised Persons

Vaccine	Not		HIV Infection/AIDS	Severely Immunocompromised (non-HIV related)*	Post-solid organ transplant or chronic immunosuppressive therapy	Asplenia, renal failure, diabetes, alcoholism, and alcoholic cirrhosis
	Immunocompromised					
Live Vaccines						
BCG						
Typhoid, Ty21a	Use if Indicated		Contraindicated	Contraindicated	Contraindicated	Use if Indicated
Vaccinia	Use if Indicated		Contraindicated	Contraindicated	Contraindicated	Use if Indicated
Varicella (Adults)	Use if Indicated		Contraindicated	See Note <sup>3</sup>	Contraindicated†	Use if Indicated
Yellow Fever <sup>4</sup>	Use if Indicated		Contraindicated	Contraindicated	Contraindicated	Use if Indicated
Killed (Inactivated) Vaccines						
Anthrax						
Polio (IPV)	Use if Indicated		Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Rabies	Use if Indicated		Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated
Typhoid, inactivated	Use if Indicated		Use if Indicated	Use if Indicated	Use if Indicated	Use if Indicated

\* Severe immunosuppression can be the result of congenital immunodeficiency, HIV infection, leukemia, lymphoma, aplastic anemia, generalized malignancy or therapy with alkylating agents, antimetabolites, radiation, or large amounts of corticosteroids.

§ Varicella vaccine is not licensed for use in persons who have any malignant condition, including blood dyscrasias, leukemia, lymphomas of any type, or other malignant neoplasms affecting the bone marrow or lymphatic systems.  
 Varicella vaccine should not be administered to persons who have cellular immunodeficiencies, but persons with impaired humoral immunity may be vaccinated. A protocol exists for use of varicella vaccine in patients with acute lymphoblastic leukemia (ALL). (See "Prevention of Varicella," *MMWR* Vol 48 No RR-6, May 28, 1999, p. 17).

Varicella vaccine should not be administered to persons who have a family history of congenital or hereditary immunodeficiency in first-degree relatives unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

<sup>‡</sup> Except persons receiving corticosteroid-replacement therapy.

<sup>¶</sup> Yellow fever vaccine should be considered for patients when exposure to yellow fever cannot be avoided. (For details, see *MMWR* Vol. 42 No. RR-4, 4/9/93, p. 7.)

This table is based on Table 3 of the ACIP's *Use of Vaccines and Immune Globulins in Persons with Altered Immunocompetence* with modifications from subsequent ACIP statements.

September, 2003

## Recommended Doses of Currently Licensed Hepatitis B Vaccines

Patient's Age	Recombivax HB (Merck & Co.)		Engerix-B (SmithKline Beecham)		Patient's Age
	Pediatric/Adolescent Formulation (Yellow Cap) 5µg per 0.5ml	Adult Formulation (Green Cap) 10µg per 1.0ml	Pediatric Formulation (Blue Cap) 10µg per 0.5ml	Adult Formulation (Orange Cap) 20µg per 1.0ml	
Birth-10 Years <sup>1</sup>				N/A	Birth-10 Years <sup>1</sup>
11-19 Years <sup>2</sup>	5µg/0.5ml	5µg/0.5ml	10µg/0.5ml		11-19 Years
Adult	10µg/1.0ml	10µg/1.0ml	N/A	20µg/1.0ml	Adult
<p><sup>1</sup>Infants born to HBsAg-positive women should also receive hepatitis B immune globulin (HBIG) within 12 hours after birth.</p> <p><sup>2</sup>Adolescents 11-15 years of age may receive the 10µg/1.0ml adult formulation of Recombivax as a 2-dose schedule with the doses separated by 4-6 months.</p> <p>N/A = Vaccine not approved for use in this age group.</p>					

January 2002

## Contraindications and Precautions to Routine Childhood Vaccinations BY CONDITION

DTaP ■ Hepatitis A ■ Hepatitis B ■ Hib ■ IPV ■ MMR ■ Pneumococcal conjugate ■ Varicella			
THIS CONDITION:	CONTRAINDICATES:	THIS CONDITION:	IS A PRECAUTION FOR:
Anaphylactic reaction to:		Moderate or severe acute illness	All vaccines
Prior vaccine dose	That vaccine		
Any vaccine component	That vaccine		
2-phenoxyethanol	Hepatitis A	Recent administration of an antibody-containing blood product <sup>3</sup>	MMR, Varicella
Alum	Hepatitis A		
Baker's yeast	Hepatitis B		
Gelatin	MMR, Varicella	Neurologic disorder – unstable or evolving	DTaP
Neomycin	MMR, Varicella, IPV		
Polymyxin B	IPV	Thrombocytopenia/ thrombocytopenic purpura (now or by history)	MMR
Streptomycin	IPV		
Encephalopathy within 7 days of a previous dose of DTP or DTaP	DTaP	Any of these conditions after a previous dose of DTP or DTaP	DTaP
Immunodeficiency, due to any cause, including HIV <sup>1</sup>	MMR, Varicella <sup>2</sup>	Fever of $\geq 40.5^{\circ}\text{C}$ ( $105^{\circ}\text{F}$ ) unexplained by another cause (within 48 hours)	
Pregnancy	MMR, Varicella	Collapse or shocklike state (within 48 hours)	
TB – untreated, active	MMR, Varicella	Persistent, unconsolable crying lasting $\geq 3$ hours (within 48 hours)	
		Seizure or convulsion (within 72 hours)	
		Guillain-Barré Syndrome (within 6 weeks)	

<sup>1</sup>Symptomatic HIV infection is generally a contraindication to MMR and varicella vaccines. Consider varicella vaccine for mildly symptomatic HIV-infected children, and consider MMR for symptomatic HIV-infected persons who do not have evidence of severe immunosuppression. Asymptomatic HIV infection is not a contraindication to either vaccine.

<sup>2</sup>Pure humoral immune deficiencies are not a contraindication to varicella vaccine.

<sup>3</sup>See ACIP General Recommendations for correct spacing.

For more details, see appropriate ACIP recommendations (<http://www.cdc.gov/nip/publications/ACIP-list.htm>).

January 2002

## Contraindications and Precautions to Routine Childhood Vaccinations BY VACCINE

DTaP ■ Hepatitis A ■ Hepatitis B ■ Hib ■ IPV ■ MMR ■ Pneumococcal conjugate ■ Varicella

### DTaP

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components
- Encephalopathy within 7 days of a previous dose of DTP or DTaP

#### Precautions:

- Moderate or severe acute illness
- Underlying unstable, evolving neurologic disorder
- Any of these conditions within the specified time after a previous dose of DTP or DTaP
  - Fever of  $\geq 40.5^{\circ}\text{C}$  ( $105^{\circ}\text{F}$ ) unexplained by another cause (within 48 hours)
  - Collapse or shocklike state (within 48 hours)
  - Persistent, inconsolable crying lasting  $\geq 3$  hours (within 48 hours)
  - Seizure or convulsion (within 72 hours)
  - Guillian-Barré syndrome (within 6 weeks)

### Hepatitis A

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., 2-phenoxyethanol, Alum)

#### Precautions:

- Moderate or severe acute illness

### Hepatitis B

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., baker's yeast)

#### Precautions:

- Moderate or severe acute illness

### HIB

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components

#### Precautions:

- Moderate or severe acute illness

### IPV

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., neomycin, streptomycin, polymyxin B)

#### Precautions:

- Moderate or severe acute illness
- Pregnancy<sup>1</sup>

### Pneumococcal Conjugate

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components

#### Precautions:

- Moderate or severe acute illness

### MMR

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., gelatin, neomycin)
- Immunodeficiency<sup>2</sup>
- Pregnancy
- TB – untreated, active

#### Precautions:

- Moderate or severe acute illness
- Recent administration of antibody-containing blood products<sup>3</sup>
- Thrombocytopenia/thrombocytopenic purpura (now or by history)

### Varicella

#### Contraindications:

- Anaphylactic reaction to a prior dose of the vaccine or any of its components (e.g., gelatin, neomycin)
- Immunodeficiency<sup>4</sup>
- Pregnancy
- TB – untreated, active

#### Precautions:

- Moderate or severe acute illness
- Recent administration of antibody-containing blood products<sup>3</sup>

<sup>1</sup>If a pregnant woman is at increased risk for infection and requires immediate protection against polio, IPV can be administered in accordance with the recommended schedule for adults.

<sup>2</sup>MMR vaccination is recommended for all asymptomatic HIV-infected persons who do not have evidence of severe immunosuppression for whom measles vaccination would otherwise be indicated. It should be considered for all symptomatic HIV-infected persons who do not have evidence of severe immunosuppression or of measles immunity.

<sup>3</sup>See ACIP General Recommendations for correct spacing.

<sup>4</sup>Varicella vaccination should be considered for asymptomatic or mildly symptomatic HIV infected children. Pure humoral immune deficiencies are not a contraindication to varicella vaccine.

For more details, see appropriate ACIP recommendations (<http://www.cdc.gov/nip/publications/ACIP-list.htm>).

January 2002

# Summary of Rules for Childhood Immunization\*

Adapted from ACIP, AAP, and AAPF by the Immunization Action Coalition, July 2002

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
<b>DTaP</b> (Diphtheria, tetanus, acellular pertussis) <i>Give IM</i>	<ul style="list-style-type: none"> <li>Give at 2m, 4m, 6m, 15-18m, 4-6yrs of age.</li> <li>May give dose #1 as early as 6wks of age.</li> <li>May give dose #4 as early as 12m of age if 6m have elapsed since #3 and the child is unlikely to return at age 15-18m.</li> <li>Do not give DTaP to children ≥7yrs of age (give Td).</li> <li>May give with all other vaccines.</li> <li>It is preferable but not mandatory to use the same DTaP product for all doses.</li> </ul>	<ul style="list-style-type: none"> <li>#2 &amp; #3 may be given 4wks after previous dose.</li> <li>#4 may be given 6m after #3.</li> <li>If #4 is given before 4th birthday, wait at least 6m for #5 (4-6yrs of age).</li> <li>If #4 is given after 4th birthday, #5 is not needed.</li> <li>Do not restart series, no matter how long since previous dose.</li> </ul>	<p><b>Contraindication for DTaP only:</b> Previous encephalopathy within 7d after DTP/DTaP.</p> <p><b>Precautions for DTaP:</b> The following are precautions, not contraindications. When these conditions are present, the individual child's disease risk should be carefully assessed. In situations when the benefit outweighs the risk (e.g., community pertussis outbreak), vaccination should be considered.</p> <ul style="list-style-type: none"> <li>T<sub>2</sub>105°F (40.5°C) within 48hrs after previous dose.</li> <li>Continuous crying lasting ≥3hrs within 48hrs after previous dose.</li> <li>Previous convulsion within 3d after immunization.</li> <li>Pale or limp episode or collapse within 48hrs after previous dose.</li> <li>Unstable progressive neurologic problem (defer until stable).</li> </ul>
<b>DT</b> <i>Give IM</i>	<ul style="list-style-type: none"> <li>Give to children &lt;7yrs of age if child had a serious reaction to "p" in DTaP/DTIP or if parents refuse the pertussis component.</li> <li>May give with all other vaccines.</li> </ul>		
<b>Td</b> <i>Give IM</i>	<ul style="list-style-type: none"> <li>Use Td, not TT, for persons ≥7yrs of age for all indications.</li> <li>A booster dose is recommended for children 11-12yrs of age if 5yrs have elapsed since last dose. Then boost every 10yrs.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>For those never vaccinated or with unknown vaccination history: give dose #1 now, give 2nd dose 4wks later, give 3rd dose 6m after #2, then give booster every 10yrs.</li> <li>Do not restart series, no matter how long since prior dose.</li> </ul>	
<b>MMR</b> (Measles, mumps, rubella) <i>Give SC</i>	<ul style="list-style-type: none"> <li>Give #1 at 12-15m of age. Give #2 at 4-6yrs of age.</li> <li>Make sure that all children (and teens) over 4-6yrs of age have received both doses of MMR.</li> <li>If a dose was given before 12m of age, it doesn't count as the first dose, so give #1 at 12-15m of age with a minimum interval of 4wks between these doses.</li> <li>May give with all other vaccines.</li> <li>If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart.</li> </ul>	<ul style="list-style-type: none"> <li>2 doses of MMR are recommended for all children ≤18yrs of age.</li> <li>Dose should be given whenever it is noted that a child is behind. Exception: If MMR and Var (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart.</li> <li>Dose #2 can be given at any time if at least 28d have elapsed since dose #1 and both doses are administered after 1yr of age.</li> <li>Do not restart the series, no matter how long since previous dose.</li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy or possibility of pregnancy within 4 weeks (use contraception).</li> <li>If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement <i>General Recommendations on Immunization</i> regarding time to wait before vaccinating.</li> <li>HIV is NOT a contraindication unless severely immunocompromised.</li> <li>Immunocompromised persons (e.g., because of cancer, leukemia, lymphoma).</li> <li>Note: For patients on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time.</li> <li>Note: MMR is not contraindicated if a PPD test was recently applied. If PPD and MMR weren't given on same day, delay PPD for 4-6wks after MMR.</li> </ul>
<b>Varicella</b> (Var) (Chickenpox) <i>Give SC</i>	<ul style="list-style-type: none"> <li>Routinely give at 12-18m of age.</li> <li>Vaccinate all children ≥12m of age including all adolescents who have not had chickenpox.</li> <li>May use as post-exposure prophylaxis if given within 3-5d.</li> <li>May give with all other vaccines.</li> <li>If Var and MMR (and/or yellow fever vaccine) are not given on the same day, space them ≥28d apart.</li> <li>Do not withhold vaccine from children of pregnant women.</li> </ul>	<ul style="list-style-type: none"> <li>Do not give to children &lt;12m of age.</li> <li>Susceptible children &lt;13yrs of age should receive 1 dose.</li> <li>Susceptible persons ≥13yrs of age should receive 2 doses 4-8wks apart.</li> <li>Do not restart series, no matter how long since previous dose.</li> </ul>	<ul style="list-style-type: none"> <li>Pregnancy or possibility of pregnancy within 4 weeks.</li> <li>If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement <i>General Recommendations on Immunization</i> regarding time to wait before vaccinating.</li> <li>Persons immunocompromised due to high doses of systemic steroids, cancer, leukemia, lymphoma, or immunodeficiency. Note: For patients with humoral immunodeficiency, HIV infection, or leukemia, or for patients on high doses of systemic steroids, see ACIP recommendations.</li> <li>For children taking salicylates, see ACIP recommendations.</li> </ul>
<b>Influenza</b> <i>Give IM</i>	Vaccinate children ≥6m of age with risk factors and encourage vaccination of all children aged 6-23m when feasible. Consult the current year's ACIP statement <i>Prevention and Control of Influenza</i> for details.		
<b>Meningococcal</b> <i>Give SC</i>	Vaccinate children ≥2yrs of age with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement on meningococcal disease (6/30/00) for details.		

\*Rules for combination vaccines consist of those applicable to each of the components. For detailed information, see the ACIP statements which are published in the *MMWR*. To obtain them, visit [www.cdc.gov/mmwr/publications/ACIP-st.htm](http://www.cdc.gov/mmwr/publications/ACIP-st.htm) or visit the Immunization Action Coalition's (IAC) website at [www.immunize.org/acip](http://www.immunize.org/acip). For recommendations of the American Academy of Pediatrics (AAP), consult AAP's 2000 Red Book and the journal *Pediatrics*, or visit [www.immunize.org/aap](http://www.immunize.org/aap). For information about vaccine shortages in the United States, visit [www.cdc.gov/mmwr/news/shortages](http://www.cdc.gov/mmwr/news/shortages).

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[www.immunize.org/acg/drdes1.pdf](http://www.immunize.org/acg/drdes1.pdf) • Item #P2010 (7/02)

## Summary of Rules for Childhood Immunization (continued)

Vaccine	Ages usually given and other guidelines	If child falls behind	Contraindications
<b>Polio</b> (IPV) Give SC or IM	<ul style="list-style-type: none"> <li>Give at 2m, 4m, 6-18m, and 4-6yrs of age.</li> <li>May give #1 as early as 6wks of age.</li> <li>Not routinely recommended for those ≥18yrs of age (except certain travelers).</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>All doses should be separated by at least 4wks.</li> <li>If #3 of an all-IPV or all-OPV series is given at ≥4yrs of age, dose #4 is not needed.</li> <li>Those who receive a combination of IPV and OPV doses must receive all 4 doses.</li> <li>Do not restart series, no matter how long since previous dose.</li> </ul>	<ul style="list-style-type: none"> <li>Do not give if patient (1) has had an anaphylactic reaction to a prior dose or to any vaccine component or (2) has a moderate or severe acute illness. (Minor illness is not a reason to postpone vaccination.)</li> </ul>
<b>Hib</b> Give IM	<ul style="list-style-type: none"> <li>HibTITER (HbOC) or ActHib or OmniHib (PRP-T): give at 2m, 4m, 6m, 12-15m (booster dose).</li> <li>PedvaxHib or Comvax (containing PRP-OMP): give at 2m, 4m, 12-15m.</li> <li>Dose #1 of Hib vaccine may be given as early as 6wks of age but no earlier.</li> <li>The last dose (booster dose) is given no earlier than 12m of age and a minimum of 8wks after the previous dose.</li> <li>May give with all other vaccines.</li> <li>Hib vaccines are interchangeable; however, if different brands of Hib conjugate vaccines are administered, a total of three doses are necessary to complete the primary series in infants.</li> <li>Any Hib vaccine may be used for the booster dose.</li> <li>Hib is not routinely given to children ≥5yrs of age.</li> </ul>	<p><b>Rules for all Hib vaccines:</b></p> <ul style="list-style-type: none"> <li>If #1 was given at 12-14m, give a booster dose in 8wks.</li> <li>Give only 1 dose for unvaccinated children ≥15m and &lt;5yrs of age.</li> <li>Do not restart series, no matter how long since previous dose.</li> </ul> <p><b>Rules for HibTITER, ActHib, and OmniHib:</b></p> <ul style="list-style-type: none"> <li>#2 and #3 may be given 4 wks after previous dose.</li> <li>If #1 was given at 7-11m, only 3 doses are needed; #2 is given 4-8wks after #1, then boost at 12-15m.</li> </ul> <p><b>Rules for PedvaxHib:</b></p> <ul style="list-style-type: none"> <li>#2 may be given 4wks after dose #1</li> </ul>	
<b>Hepatitis B</b> Give IM	<ul style="list-style-type: none"> <li>Vaccinate all newborns prior to hospital discharge. Give dose #2 at 1-4m, and dose #3 at 6-18m. After the first dose, the series may be completed with single-antigen vaccine or up to 3 doses of Comvax, e.g., 2m, 4m, 12m of age. Dose #1 can be given as late as 2m of age if the mother is assured to be HBsAg negative, but this is not the preferred schedule.</li> <li>Vaccinate all children 0 through 18yrs of age.</li> <li>For older children/teens, schedules include: 0, 1, 6-m; 0-, 2-, 4-m; 0-, 1-, 4-m.</li> <li>Children born (or whose parents were born) in countries of high HBV endemicity or who have other risk factors should be vaccinated ASAP.</li> <li>If mother is HBsAg-positive: give HBIG + dose #1 within 12hrs of birth, #2 at 1-2m, and #3 at 6m of age.</li> <li>If mother is HBsAg status is unknown: give dose #1 within 12hrs of birth, #2 at 1-2m, and #3 at 6m of age. If mother is later found to be HBsAg positive, give infant HBIG within 7d of birth.</li> <li>Note: For premature infants, hepatitis B vaccination recommendations may be different. Consult the 2000 Red Book (p. 54).</li> <li>May give with all other vaccines.</li> </ul>	<p><b>Dosing of hepatitis B vaccines:</b></p> <p>Vaccine brands are interchangeable for 3-dose schedules.</p> <p>For Engerix-B, use 10mcg for 0 through 19yrs of age.</p> <p>For Recombivax HB, use 5mcg for 0 through 19yrs of age.</p> <p><b>Alternative dosing schedule for unvaccinated adolescents aged 11 through 15yrs:</b></p> <p>Give Recombivax HB two 10mcg doses (adult dosage) spaced 4-6m apart.</p> <p>(Engerix-B is not licensed for a 2-dose schedule.)</p>	
<b>Hepatitis A</b> Give IM	<ul style="list-style-type: none"> <li>Vaccinate children ≥2yrs old who live in areas with consistently elevated rates of hepatitis A, as well as children who have specific risk factors. (See ACIP statement and column 3 of this table for details.)</li> <li>Children who travel outside of the U.S. (except to Western Europe, New Zealand, Australia, Canada, or Japan).</li> <li>Dose #2 is given a minimum of 6m after dose #1.</li> <li>Dose #1 may not be given earlier than 2yrs of age.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Do not restart series, no matter how long since previous dose.</li> <li>Hepatitis A vaccine brands are interchangeable.</li> <li>Consult your local/state public health authority for information regarding your city, county, or state hepatitis A rates. States with consistently elevated rates (average ≥10 cases per 100,000 population from 1987-1997) include the following: AL, AZ, AK, CA, CO, ID, MO, MT, NV, NM, OK, OR, SD, TX, UT, WA, and WY.</li> </ul>	
<b>PCV</b> Give IM	<ul style="list-style-type: none"> <li>Give at 2m, 4m, 6m, and 12-15m of age.</li> <li>Dose #1 may be given as early as 6wks of age.</li> <li>For unvaccinated high-risk children* 24-59m of age, give 2 doses. If PPV not previously given, administer ≥8wks after final dose of PCV.</li> <li>For unvaccinated moderate-risk children* 24-59m of age, consider giving 1 dose.</li> <li>May give 1 dose to unvaccinated healthy children 24-59m.</li> <li>PCV is not routinely given to children ≥5 years of age.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>For infants 7-11m of age: if unvaccinated, give dose #1 now, give 2nd dose 4-8wks later, and boost at 12-15m. If infant has had 1 or 2 previous doses, give next dose now, and boost at 12-15m.</li> <li>For infants 12-23 months: If not previously vaccinated or only one previous dose before 12m, give 2 doses ≥8wks apart. If infant previously had 2 doses, give booster dose ≥8 wks after previous dose.</li> </ul>	
<b>PPV</b> IM or SC	<ul style="list-style-type: none"> <li><b>High-risk children:</b> Those with sickle cell disease; anatomic or functional asplenia; chronic cardiac, pulmonary, or renal disease; diabetes mellitus; CSF leak; HIV infection; or immunosuppression.</li> <li><b>Moderate-risk children:</b> Children aged 24-35m; children aged 24-59m who attend group day-care centers or are of Alaska Native, American Indian, or African American descent.</li> </ul>	<ul style="list-style-type: none"> <li>Do not restart series, no matter how long since previous dose.</li> </ul>	<p>Give PPV to high-risk children ≥2yrs of age as recommended in the ACIP statement <i>Prevention of Pneumococcal Disease</i> (4/4/97).</p>

# Summary of Recommendations for Adult Immunization

Adapted from the Advisory Committee on Immunization Practices (ACIP) recommendations by the Immunization Action Coalition, June 2002

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
<b>Influenza</b> <i>GvE IM</i>	<ul style="list-style-type: none"> <li>Adults who are 50yrs of age or older.</li> <li>People 6m-50yrs of age with medical problems such as heart disease, lung disease, diabetes, renal dysfunction, hemoglobinopathies, immunosuppression, and/or people living in chronic care facilities.</li> <li>People (26m of age) working or living with at-risk people.</li> <li>Pregnant women who have underlying medical conditions should be vaccinated before influenza season, regardless of the stage of pregnancy.</li> <li>Healthy pregnant women who will be in their 2nd or 3rd trimesters during influenza season.</li> <li>All health care workers and those who provide key community services.</li> <li>Travelers who go to areas where influenza activity exists or who may be among people from areas of the world where there is current influenza activity (e.g., on organized tours).</li> <li>Anyone who wishes to reduce the likelihood of becoming ill with influenza.</li> </ul>	<ul style="list-style-type: none"> <li>Given every year.</li> <li>October through November is the optimal time to receive an annual flu shot to maximize protection.</li> <li>Influenza vaccine may be given at any time during the influenza season (typically December through March) or at other times when the risk of influenza exists.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine, to any of its components, or to eggs.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Pregnancy and breastfeeding are not contraindications to the use of this vaccine.</li> </ul>
<b>Pneumococcal polysaccharide (PPV23)</b> <i>GvE IM or SC</i>	<ul style="list-style-type: none"> <li>Adults who are 65yrs of age or older.</li> <li>People 2-64yrs of age who have chronic illness or other risk factors, including chronic cardiac or pulmonary disease, chronic liver disease, alcoholism, diabetes mellitus, COPD, as well as people living in special environments or social settings (including Alaska Natives and certain American Indian populations). Those at highest risk of fatal pneumococcal infection are people with anatomic asplenia, functional asplenia, or sickle cell disease; immunocompromised persons including those with HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, or nephrotic syndrome; persons receiving immunosuppressive chemotherapy (including corticosteroids); and those who received an organ or bone marrow transplant. Pregnant women with high-risk conditions should be vaccinated if not done previously.</li> </ul>	<ul style="list-style-type: none"> <li>Routinely given as a one-time dose; administer if previous vaccination history is unknown.</li> <li>One-time revaccination is recommended 5yrs later for people at highest risk of fatal pneumococcal infection or rapid antibody loss (e.g., renal disease) and for people 2-64yrs of age if the 1st dose was given prior to age 65 and 2-5yrs have elapsed since previous dose.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine or to any of its components.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Pregnancy and breastfeeding are not contraindications to the use of this vaccine.</li> </ul>
<b>Hepatitis B (Hep-B)</b> <i>GvE IM</i> Brands may be used interchangeably.	<ul style="list-style-type: none"> <li>All adolescents.</li> <li>High-risk adults, including household contacts and sex partners of HBsAg-positive persons; users of illicit injectable drugs; heterosexuals with more than one sex partner in 6 months; men who have sex with men; people with recently diagnosed STDs; patients receiving hemodialysis and patients with renal disease that may result in dialysis; recipients of certain blood products; health care workers and public safety workers who are exposed to blood; clients and staff of institutions for the developmentally disabled; inmates of long-term correctional facilities; and certain international travelers.</li> <li><b>Note:</b> Prior serologic testing may be recommended depending on the specific level of risk and/or likelihood of previous exposure. <b>Note:</b> In 1997, the NIH Consensus Development Conference, a panel of national experts, recommended that hepatitis B vaccination be given to all anti-HCV positive persons.</li> <li><b>Ed. note:</b> Provide serologic screening for immigrants from endemic areas. When HBsAg-positive persons are identified, offer appropriate disease management. In addition, screen their sex partners and household members and, if found susceptible, vaccinate.</li> </ul>	<ul style="list-style-type: none"> <li>Three doses are needed on a 0, 1, 6m schedule.</li> <li>Alternative timing options for vaccination include 0, 2, 4m and 0, 1, 4m.</li> <li>There must be 4wks between doses #1 and #2, and 8wks between doses #2 and #3. Overall there must be at least 16wks between doses #1 and #3.</li> <li><b>Schedule for those who have fallen behind:</b> If the series is delayed between doses, DO NOT start the series over. Continue from where you left off.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine or to any of its components.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Pregnancy and breastfeeding are not contraindications to the use of this vaccine.</li> </ul>
<b>Hepatitis A (Hep-A)</b> <i>GvE IM</i> Brands may be used interchangeably.	<ul style="list-style-type: none"> <li>People who travel outside of the U.S. (except for Western Europe, New Zealand, Australia, Canada, and Japan).</li> <li>People with chronic liver disease, including people with hepatitis C; people with hepatitis B who have chronic liver disease; illicit drug users; men who have sex with men; people with clotting-factor disorders; people who work with hepatitis A virus in experimental lab settings (not routine medical laboratories); and food handlers when health authorities or private employers determine vaccination to be cost effective.</li> <li><b>Note:</b> Prevacination testing is likely to be cost effective for persons &gt;40yrs of age as well as for younger persons in certain groups with a high prevalence of hepatitis A virus infection.</li> </ul>	<p>For Twinrix™ (hepatitis A and B combination vaccine [OSK]) three doses are needed on a 0, 1, 6m schedule.</p> <ul style="list-style-type: none"> <li>Two doses are needed.</li> <li>The minimum interval between dose #1 and #2 is 6m.</li> <li>If dose #2 is delayed, do not repeat dose #1. Just give dose #2.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine or to any of its components.</li> <li>Moderate or severe acute illness.</li> <li>Safety during pregnancy has not been determined, so benefits must be weighed against potential risk.</li> <li><b>Note:</b> Breastfeeding is not a contraindication to the use of this vaccine.</li> </ul>

For specific ACIP immunization recommendations refer to the statements, which are published in *MMWR*. To obtain a complete set of ACIP statements, call (800) 232-2522, or to access individual statements, visit CDC's website: [www.cdc.gov/nip/publications/ACIP-list.htm](http://www.cdc.gov/nip/publications/ACIP-list.htm) or visit IAC's website: [www.immunize.org/actio](http://www.immunize.org/actio). This table is revised yearly due to the changing nature of U.S. immunization recommendations. Visit the Immunization Action Coalition's website at [www.immunize.org/adultbook](http://www.immunize.org/adultbook) to make sure you have the most current version. The Coalition thanks the following individuals for their help: William Attkisson, MD, from CDC's National Immunization Program, and Linda Meyer, RN, and Harold Margolis, MD, both from the Division of Viral Hepatitis, at CDC's National Center for Infectious Diseases. This table is published by the Immunization Action Coalition, 1573 Selby Avenue, St. Paul, MN 55104, (651) 647-9009. E-mail: [admin@immunize.org](mailto:admin@immunize.org)

Item #F2011 (6/02)

## Summary of Recommendations for Adult Immunization

Vaccine name and route	For whom it is recommended	Schedule for routine and "catch-up" administration	Contraindications (mild illness is not a contraindication)
<b>Td</b> (Tetanus, diphtheria) <i>GIVE IM</i>	<ul style="list-style-type: none"> <li>All adolescents and adults.</li> <li>After the primary series has been completed, a booster dose is recommended every 10 years. Make sure your patients have received a primary series of 3 doses.</li> <li>A booster dose as early as 5 years later may be needed for the purpose of wound management, so consult ACIP recommendations.</li> </ul>	<ul style="list-style-type: none"> <li>Give booster dose every 10 years after the primary series has been completed.</li> <li>For those who are unvaccinated or behind, complete the primary series (spaced at 0, 1-2m, 6-12m intervals). Don't restart the series, no matter how long since the previous dose.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic or neurologic reaction to this vaccine or to any of its components.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Pregnancy and breastfeeding are not contraindications to the use of this vaccine.</li> </ul>
<b>MMR</b> (Measles, mumps, rubella) <i>GIVE SC</i>	<ul style="list-style-type: none"> <li>Adults born in 1957 or later who are ≥18 years of age (including those born outside the U.S.) should receive at least one dose of MMR if there is no serologic proof of immunity or documentation of a dose given on or after the first birthday.</li> <li>Adults in high-risk groups, such as health care workers, students entering colleges and other post-high school educational institutions, and international travelers, should receive a total of two doses.</li> <li>Adults born before 1957 are usually considered immune but proof of immunity may be desirable for health care workers.</li> <li>All women of childbearing age (i.e., adolescent girls and premenopausal adult women) who do not have acceptable evidence of rubella immunity or vaccination.</li> <li>Special attention should be given to immunizing women born outside the United States in 1957 or later.</li> </ul>	<ul style="list-style-type: none"> <li>One or two doses are needed.</li> <li>If dose #2 is recommended, give it no sooner than 4 weeks after dose #1.</li> <li>May give with all other vaccines.</li> <li>If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4 weeks apart.</li> <li>If a pregnant woman is found to be rubella-susceptible, administer MMR postpartum.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine, or to any of its components.</li> <li>Pregnancy or possibility of pregnancy within 4 weeks (use contraception).</li> <li>Persons immunocompromised due to cancer, leukemia, lymphoma, immunosuppressive drug therapy, including high-dose steroids or radiation therapy. <b>Note:</b> HIV positivity is NOT a contraindication to MMR except for those who are severely immunocompromised.</li> <li>If blood, plasma, and/or immune globulin were given in past 11m, see ACIP statement <i>General Recommendations on Immunization</i> regarding time to wait before vaccinating.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Breastfeeding is not a contraindication to the use of this vaccine.</li> <li><b>Note:</b> MMR is not contraindicated if a PPD test was recently applied. If PPD and MMR not given on same day, delay PPD for 4-6 weeks after MMR.</li> </ul>
<b>Varicella</b> (Var) (Chickenpox) <i>GIVE SC</i>	<ul style="list-style-type: none"> <li>All susceptible adults and adolescents should be vaccinated. It is especially important to ensure vaccination of the following groups: susceptible persons who have close contact with persons at high risk for serious complications (e.g., health care workers and family contacts of immunocompromised persons) and susceptible persons who are at high risk of exposure (e.g., teachers of young children, day care employees, residents and staff in institutional settings such as colleges and correctional institutions, military personnel, adolescents and adults living with children, non-pregnant women of childbearing age, and international travelers who do not have evidence of immunity).</li> <li><b>Note:</b> People with reliable histories of chickenpox (such as self or parental report of disease) can be assumed to be immune. For adults who have no reliable history, serologic testing may be cost effective since most adults with a negative or uncertain history of varicella are immune.</li> </ul>	<ul style="list-style-type: none"> <li>Two doses are needed.</li> <li>Dose #2 is given 4-6 weeks after dose #1.</li> <li>May give with all other vaccines.</li> <li>If varicella vaccine and MMR are both needed and are not administered on the same day, space them at least 4 weeks apart.</li> <li>If the second dose is delayed, do not repeat dose #1. Just give dose #2.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic reaction to this vaccine or to any of its components.</li> <li>Pregnancy or possibility of pregnancy within 4 weeks (use contraception).</li> <li>Immunocompromised persons due to malignancies and primary or acquired cellular immunodeficiency including HIV/AIDS. (See <i>MMWR</i> 1999, Vol. 28, No. RR-6.) <b>Note:</b> For those on high-dose immunosuppressive therapy, consult ACIP recommendations regarding delay time.</li> <li>If blood, plasma, and/or immune globulin (IG or VZIG) were given in past 11m, see ACIP statement <i>General Recommendations on Immunization</i> regarding time to wait before vaccinating.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Breastfeeding is not a contraindication to the use of this vaccine.</li> <li><b>Note:</b> Manufacturer recommends that salicylates be avoided for 6 weeks after receiving varicella vaccine because of a theoretical risk of Reye's syndrome.</li> </ul>
<b>Polio</b> (IPV) <i>GIVE IM or SC</i>	<ul style="list-style-type: none"> <li>Not routinely recommended for persons 18 years of age and older.</li> <li><b>Note:</b> Adults living in the U.S. who never received or completed a primary series of polio vaccine need not be vaccinated unless they intend to travel to areas where exposure to wild-type virus is likely. Previously vaccinated adults can receive one booster dose if traveling to polio endemic areas.</li> </ul>	<ul style="list-style-type: none"> <li>Refer to ACIP recommendations regarding unique situations, schedules, and dosing information.</li> <li>May give with all other vaccines.</li> </ul>	<ul style="list-style-type: none"> <li>Previous anaphylactic or neurologic reaction to this vaccine or to any of its components.</li> <li>Moderate or severe acute illness.</li> <li><b>Note:</b> Pregnancy and breastfeeding are not contraindications to the use of this vaccine.</li> </ul>
<b>Meningococcal</b> <i>GIVE SC</i>	Vaccinate people with risk factors. Discuss disease risk and vaccine availability with college students. Consult ACIP statement on meningococcal disease (6/30/00) for details.		



## Screening Questionnaire for Child and Teen Immunization

**For parents/guardians:** The following questions will help us determine which vaccines may be given today. If a question is not clear, please ask the nurse or doctor to explain it.

	Yes	No	Don't Know
1. Is the child sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the child have allergies to medications, food, or any vaccine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Has the child had a serious reaction to a vaccine in the past?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Has the child had a seizure or a brain problem?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Does the child have cancer, leukemia, AIDS, or any other immune system problem?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Has the child received any vaccinations in the past 4 weeks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Form completed by: \_\_\_\_\_ Date: \_\_\_\_\_

**Did you bring your child's immunization record card with you?** yes ☐ no ☐

It is important to have a personal record of your child's vaccinations. If you don't have a record card, ask the child's health care provider to give you one! Bring this record with you every time you seek medical care for your child. Make sure your health care provider records all your child's vaccinations on it. Your child will need this card to enter daycare, kindergarten, junior high, etc.

Item #P4060 (1/02)

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## Understanding the Screening Questionnaire for Child & Teen Immunization

The information below has been adapted from CDC's *Guide to Contraindications to Childhood Vaccinations*, Oct. 2000, and *Epidemiology & Prevention of Vaccine-Preventable Diseases*, WL Atkinson et al., editors, CDC, 6th edition, Jan. 2000.



### 1. Is the child sick today?

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events (1, 2). However, with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as otitis media, upper respiratory infections, and diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

### 2. Does the child have allergies to medications, food, or any vaccine?

History of anaphylactic reaction such as hives (urticaria), wheezing or difficulty breathing, or circulatory collapse or shock (not fainting) from a previous dose of vaccine or vaccine component is a contraindication for further doses. For example, if a person experiences anaphylaxis after eating eggs, do not administer influenza vaccine, or if a person has anaphylaxis after eating gelatin, do not administer MMR or varicella vaccine. Local reactions (e.g., a red eye following instillation of ophthalmic solution) are not contraindications. For an extensive table of vaccine components, see reference 3.

### 3. Has the child had a serious reaction to a vaccine in the past?

History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses. History of encephalopathy within 7 days following DTP/DaP is a contraindication for further doses of pertussis-containing vaccine. Precautions to pertussis-containing vaccines include the following: (a) seizure within 3 days of a dose, (b) pale or limp episode or collapse within 48 hours of a dose, (c) continuous crying for 3 hours within 48 hours of a dose, and (d) fever of 105°F (40°C) within 48 hours of a previous dose. There are other serious reactions to vaccines that constitute contraindications or precautions (4). Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit outweighs the risk (e.g., community pertussis outbreak).

### 4. Has the child had a seizure or a brain problem?

DTP is contraindicated in children who have a history of encephalopathy within 7 days following DTP/DaP. An unstable progressive neurologic problem is a precaution to the use of DTP/DaP. For children with stable neurologic disorders (including seizures) unrelated to vaccination, or for children with a family history of seizure, vaccinate as usual but consider the use of acetaminophen or ibuprofen to minimize fever.

### 5. Does the child have cancer, leukemia, AIDS, or any other immune system problem?

Live virus vaccines (e.g., MMR, varicella) are usually contraindicated in immunocompromised children. However, there are exceptions. For example, MMR and varicella vaccines are recommended for

asymptomatic HIV-infected children who do not have evidence of severe immunosuppression. For details, consult the ACIP recommendations (5, 6).

### 6. Has the child taken cortisone, prednisone, other steroids, or anticancer drugs, or had x-ray treatments in the past 3 months?

Live virus vaccines (e.g., MMR, varicella) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement (1). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 7.

### 7. Has the child received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin in the past year?

Live virus vaccines (e.g., MMR, varicella) may need to be deferred, depending on several variables. Consult the 2000 Red Book, p. 390 (2), for the most current information on intervals between immune globulin or blood product administration and MMR or varicella vaccination.

### 8. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?

Live virus vaccines (e.g., MMR, varicella) are contraindicated prior to and during pregnancy due to the theoretical risk of virus transmission to the fetus. Sexually active young women who receive MMR or varicella vaccination should be instructed to practice careful contraception for one month following receipt of either vaccine (8, 9). Different inactivated vaccines may be given to a pregnant woman whenever indicated.

### 9. Has the child received any vaccinations in the past 4 weeks?

If two live virus vaccines (e.g., MMR, varicella) are not given on the same day, the doses must be separated by at least 28 days. Different inactivated vaccines may be given at any spacing interval if they are not administered simultaneously.

1. CDC. General recommendations on immunization. *MMWR* 1994; 34 (RR-1).
2. AAP. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL: AAP; 2000.
3. Visit the website: [www.cdc.gov/nip/publications/pink/vaxcont.pdf](http://www.cdc.gov/nip/publications/pink/vaxcont.pdf)
4. CDC. Guide to contraindications to childhood vaccinations. Oct. 2000. Available online at: [www.cdc.gov/nip/frees/contraindications.pdf](http://www.cdc.gov/nip/frees/contraindications.pdf)
5. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-8).
6. CDC. Prevention of varicella: updated recommendations of the ACIP. *MMWR* 1999; 48 (RR-6).
7. CDC. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients. *MMWR* 2000; 49 (RR-10).
8. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2001; 50 (49).
9. CDC. Prevention of varicella. *MMWR* 1996; 45 (RR-11).

Patient name: \_\_\_\_\_ Date of birth: \_\_\_\_/\_\_\_\_/\_\_\_\_  
(mo.) (day) (yr.)

## Screening Questionnaire for Adult Immunization



**For patients:** The following questions will help us determine which vaccines may be given today.  
If a question is not clear, please ask your health care provider to explain it.

	Yes	No	Don't Know
1. Are you sick today?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Do you have allergies to medications, food, or any vaccine?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Have you ever had a serious reaction after receiving a vaccination?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Do you have cancer, leukemia, AIDS, or any other immune system problem?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had x-ray treatments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Have you received any vaccinations in the past 4 weeks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Form completed by: \_\_\_\_\_ Date: \_\_\_\_\_

**Did you bring your immunization record card with you?**    yes ☐    no ☐

It is important for you to have a personal record of your vaccinations. If you don't have a record card, ask your health care provider to give you one! Bring this record with you every time you seek medical care. Make sure your health care provider records all your vaccinations on it.

Item #P4065 (1/02)

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## Understanding the Screening Questionnaire for Adult Immunization

The information below has been adapted from *Epidemiology & Prevention of Vaccine-Preventable Diseases*, WL Atkinson et al., editors, CDC, 6th edition, Jan. 2000, and CDC's *Guide to Contraindications to Childhood Vaccinations*, Oct. 2000.



### 1. Are you sick today?

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events (1, 2). However, with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as upper respiratory infections or diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

### 2. Do you have allergies to medications, food, or any vaccine?

History of anaphylactic reaction such as hives (urticaria), wheezing or difficulty breathing, or circulatory collapse or shock (not fainting) from a previous dose of vaccine or vaccine component is a contraindication for further doses. For example, if a person experiences anaphylaxis after eating eggs, do not administer influenza vaccine, or if a person has anaphylaxis after eating gelatin, do not administer MMR or varicella vaccine. Local reactions (e.g., a red eye following instillation of ophthalmic solution) are not contraindications. For an extensive table of vaccine components, see reference 3.

### 3. Have you ever had a serious reaction after receiving a vaccination?

History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses (4). Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit outweighs the risk (e.g., community measles outbreak).

### 4. Do you have cancer, leukemia, AIDS, or any other immune system problem?

Live virus vaccines (e.g., MMR, varicella) are usually contraindicated in immunocompromised people. However, there are exceptions. For example, MMR is recommended for asymptomatic HIV-infected individuals who do not have evidence of severe immunosuppression. For details, consult the ACIP recommendations (5, 6).

### 5. Do you take cortisone, prednisone, other steroids, or anticancer drugs, or have you had x-ray treatments?

Live virus vaccines (e.g., MMR, varicella) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement (1). To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see reference 7.

### 6. During the past year, have you received a transfusion of blood or blood products, or been given a medicine called immune (gamma) globulin?

Live virus vaccines (e.g., MMR, varicella) may need to be deferred, depending on several variables. Consult the ACIP Statement "General Recommendations on Immunization" (1) or 2000 Red Book, p. 390 (2), for the most current information on intervals between immune globulin or blood product administration and MMR or varicella vaccination.

### 7. For women: Are you pregnant or is there a chance you could become pregnant during the next month?

Live virus vaccines (e.g., MMR, varicella) are contraindicated prior to and during pregnancy due to the theoretical risk of virus transmission to the fetus. Sexually active women in their child-bearing years who receive MMR or varicella vaccination should be instructed to practice careful contraception for one month following receipt of either vaccine (8, 9). Inactivated vaccines may be given to a pregnant woman whenever indicated.

### 8. Have you received any vaccinations in the past 4 weeks?

If two live virus vaccines (e.g., MMR, varicella, yellow fever) are not given on the same day, the doses must be separated by at least 28 days. Inactivated vaccines may be given at any spacing interval if they are not administered simultaneously. (For travelers, consult the Yellow Book (10).)

1. CDC. General recommendations on immunization. *MMWR* 1994; 34 (RR-1).
2. AAP. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL: AAP; 2000.
3. Visit the website: [www.cdc.gov/nip/publications/pink/vaxcont.pdf](http://www.cdc.gov/nip/publications/pink/vaxcont.pdf)
4. CDC. Guide to contraindications to childhood vaccinations. Oct. 2000. Available online at: [www.cdc.gov/hip/recs/contraindications.pdf](http://www.cdc.gov/hip/recs/contraindications.pdf)
5. CDC. Measles, mumps, and rubella—vaccine use and strategies for elimination of measles, rubella, and congenital rubella syndrome and control of mumps. *MMWR* 1998; 47 (RR-8).
6. CDC. Prevention of varicella: updated recommendations of the ACIP. *MMWR* 1999; 48 (RR-6).
7. CDC. Guidelines for preventing opportunistic infections among hematopoietic stem cell transplant recipients. *MMWR* 2000; 49 (RR-10).
8. CDC. Notice to readers: Revised ACIP recommendation for avoiding pregnancy after receiving a rubella-containing vaccine. *MMWR* 2001; 50 (49).
9. CDC. Prevention of varicella. *MMWR* 1996; 45 (RR-11).
10. CDC. Health Information for International Travel, 1999-2000, DHHS, Atlanta, GA.

Your name: \_\_\_\_\_ Date of birth: \_\_\_\_/\_\_\_\_/\_\_\_\_ Today's date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
(mo.) (day) (yr.) (mo.) (day) (yr.)



## Do I Need Any Vaccinations Today?

Many adults are behind on their vaccinations. Do you know if you are completely up to date? These checklists will help you determine if you need any vaccinations today. Please check the boxes that pertain to you.

### Influenza vaccination

- ☐ I am 50 years of age or older, so I should get a flu shot.
- ☐ I am less than 50 years old, and I have one or more of the following, so I should get a flu shot:
- |   |  |
|---|--|
| <input type="checkbox"/> lung disease                             | <input type="checkbox"/> I live in a nursing home or chronic care facility.  |
| <input type="checkbox"/> heart disease                            | <input type="checkbox"/> I live with someone who is in one of the above risk groups.                                 |
| <input type="checkbox"/> kidney disease                           | <input type="checkbox"/> I will be in my 2nd or 3rd trimester of pregnancy during influenza season (December–March). |
| <input type="checkbox"/> diabetes mellitus                        | <input type="checkbox"/> I am a health care worker.  |
| <input type="checkbox"/> HIV/AIDS                                 | <input type="checkbox"/> I provide essential community services.   |
| <input type="checkbox"/> a disease that affects the immune system |  |
- ☐ I am not in one of the groups listed above, but I'd like a flu shot to avoid getting influenza this season.

### Pneumococcal vaccination

- ☐ I am 65 years of age or older, and I have never had a dose of pneumococcal vaccine, so I need this vaccination.
- ☐ I am 65 years of age or older, had a previous dose when I was under 65, and it has been at least 5 years since that dose, so I need a second dose now.
- ☐ I am less than 65 years old, and I have one of the following health problems, and I have never had a dose of pneumococcal vaccine, so I need this vaccination.
- |  |  |   |                                     |
|--|--|---|-------------------------------------|
| <input type="checkbox"/> lung disease (not asthma) | <input type="checkbox"/> diabetes mellitus | <input type="checkbox"/> liver disease            | <input type="checkbox"/> alcoholism |
| <input type="checkbox"/> heart disease             | <input type="checkbox"/> kidney disease    | <input type="checkbox"/> cerebrospinal fluid leak |                                     |
- ☐ I am less than 65 years old, and I have one of the following health problems listed below that puts me at high risk for pneumococcal disease and:
- ☐ I have never had a dose of pneumococcal vaccine, so I need two doses spaced 5 years apart.
- ☐ It has been at least 5 years since my first dose of pneumococcal vaccine, so I need a second dose now.
- |  |   |   |
|--|---|---|
| <input type="checkbox"/> sickle cell disease   | <input type="checkbox"/> leukemia   | <input type="checkbox"/> lymphoma               |
| <input type="checkbox"/> had my spleen removed | <input type="checkbox"/> on medication or receiving x-ray treatment that affects my immune system | <input type="checkbox"/> multiple myeloma       |
| <input type="checkbox"/> HIV/AIDS              | <input type="checkbox"/> organ or bone marrow transplant  | <input type="checkbox"/> generalized malignancy |
| <input type="checkbox"/> Hodgkin's disease     |   |   |
- Approximate date that I last had pneumococcal vaccine: \_\_\_\_\_

### Tetanus-diphtheria (Td) vaccination

- ☐ I have not yet had at least 3 Td shots in my lifetime (usually given as DTP in childhood), so I need to be vaccinated now with one or more doses to bring me up to date, and then I will need one dose every 10 years.
- ☐ I have had at least 3 Td shots (or DTPs) in my lifetime, but I think it's been 10 years or more since I received my last Td, so I need one dose now, and subsequently I will need one dose every 10 years.
- Approximate date(s) that I had my last Td(s): \_\_\_\_\_
- ☐ I have no idea if I ever received Td vaccination in school, the military, or elsewhere, so I probably need to be vaccinated and will talk with my doctor about how many doses I should receive.

Item #P4036 (3/02)

**Hepatitis A vaccination**

☐ I am in one of the following risk groups, **but I do not wish to disclose which one**, so I need to be vaccinated.

☐ I am in one of the following risk groups, so I need to be vaccinated:

\_\_\_ I travel outside of the U.S., Western Europe, Canada, Japan, Australia, and New Zealand.\*

\_\_\_ I live in a community where cases of hepatitis A are occurring and I am 18 or younger.

\_\_\_ I am a man who has sex with men.

\_\_\_ I use street drugs.

\_\_\_ I have chronic liver disease.

\_\_\_ I have a clotting factor disorder.

**Hepatitis B vaccination**

☐ I am in one of the following risk groups, **but I do not wish to disclose which one**, so I need to be vaccinated.

☐ I am in one of the following risk groups, so I need to be vaccinated:

\_\_\_ I live with a person who has hepatitis B.

\_\_\_ I have a bleeding disorder that requires transfusion.

\_\_\_ I am or will be on kidney dialysis.

\_\_\_ I am an immigrant from an area of the world with moderate or high rates of hepatitis B.†

\_\_\_ I inject street drugs.

\_\_\_ I am a sex partner of a person with hepatitis B.

\_\_\_ I've been treated for a sexually transmitted disease.

\_\_\_ I have or had more than one sex partner during a 6-month time period.

\_\_\_ I am a man who has sex with men.

\_\_\_ I am a health care or public safety worker who is exposed to blood.

\_\_\_ I provide direct services for people with developmental disabilities.

\_\_\_ I travel outside of the U.S.\*† and plan to stay for 6 months or longer.

**Measles-Mumps-Rubella (MMR) vaccination**

☐ I was born after 1956 and never received a dose of MMR, so I need to be vaccinated.

☐ I am a woman thinking about a future pregnancy and do not know if I'm immune to rubella, so I need to be tested or vaccinated.

☐ I am included in one of the following groups for whom two doses of MMR are recommended, but I have only received one dose of MMR, so I need a second dose.

\_\_\_ I am a health care worker.

\_\_\_ I travel internationally.

\_\_\_ I am entering college or a post-high-school educational institution.

\_\_\_ I had a rubella titer that shows I do not have immunity.

**Chickenpox (Varicella) vaccination**

☐ I have never had chickenpox, so I need to be tested or vaccinated.

☐ I'm not sure if I've had chickenpox or not, so I need to be tested or vaccinated.

☐ I may become pregnant and do not know if I'm immune to chickenpox, so I need to be tested or vaccinated.

**Meningococcal vaccination**

☐ I am (or I'll be) a college freshman living in a dorm, so tell me more about the meningococcal vaccine.

☐ I am traveling to an area of the world where meningococcal disease is common, so I need to be vaccinated.\*

☐ I have sickle cell disease, or a spleen that isn't working or has been removed, so I need to be vaccinated.

**Haemophilus influenzae type b (Hib) vaccination**

☐ I have one of the following health conditions: HIV infection, bone marrow transplant, sickle cell disease or a spleen that isn't working or has been removed, so I need to be vaccinated.

\*Call your local travel clinic to find out if additional vaccines are recommended.

† Adults from these areas should be tested for hepatitis B infection prior to vaccination. Areas with high rates of hepatitis B include: Africa; China; Korea; Southeast Asia including Indonesia and the Philippines; the Middle East except Israel; South and Western Pacific Islands; interior Amazon Basin; and certain parts of the Caribbean, i.e., Haiti and the Dominican Republic. Areas of moderate endemicity include South Central and Southwest Asia, Israel, Japan, Eastern and Southern Europe, Russia, and most of Central and South America.



Shots may hurt a little . . .  
but the disease can hurt a lot!

**Call the clinic if you answer "yes" to any of the following questions:**

- Does your child have a rectal temperature of 105°F or higher?

(Remember, a temperature taken under the arm or by mouth usually registers lower than a rectal temperature. You should call the clinic if you are concerned about these temperatures.)

- Is your child pale or limp?
- Has your child been crying for over 3 hours and just won't quit?
- Does your child have a strange cry that isn't normal (a high-pitched cry)?
- Is your child's body shaking, twitching, or jerking?

## After the Shots . . .

### What to do if your child has discomfort

*Your child may need extra love and care after getting immunized. Many of the shots that protect children from serious diseases can also cause discomfort for a while. Here are answers to questions many parents have about the fussiness, fever, and pain their children may experience after they have been immunized. If you don't find the answers to your questions, call the clinic!*

My clinic phone number:

#### My child has been fussy since you immunized him/her. What should I do?

After immunization, children may be fussy due to pain and/or fever. You may want to give your child acetaminophen, a medicine that helps to reduce pain and fever. Some examples of acetaminophen are Tylenol, Panadol, and Tempra. **DO NOT GIVE ASPIRIN.** See chart below. If the fussiness lasts for more than 24 hours, you should call the clinic.

#### My child's arm (or leg) is swollen, hot, and red. What should I do?

- A clean, cool washcloth may be applied over the sore area as needed for comfort.
- If there is increasing redness or tenderness after 24 hours, call the clinic.
- For pain, give acetaminophen. See chart below. **DO NOT GIVE ASPIRIN.**

#### I think my child has a fever. What should I do?

Check your child's temperature to find out if there is a fever. The most accurate way to do this is by taking a rectal temperature. (Be sure to use a lubricant, such as petroleum jelly, when doing so.) If your child's fever is 105°F or higher by rectum, you need to call the clinic.

If you take the temperature by mouth (for an older child) or under the arm, these temperatures are generally lower and may be less accurate. Call your clinic if you are concerned about these temperatures.

Here are some things you can do to reduce fever:

- Give your child plenty to drink.
- Clothe your child lightly. Do not cover or wrap your child tightly!
- Give your child acetaminophen. **DO NOT USE ASPIRIN.**
- Sponge your child in a few inches of lukewarm (not cold!) bath water.

#### My child seems really sick. Should I call the doctor?

If you are worried AT ALL about how your child looks or feels, please call the clinic!

### How much fever-reducing medicine (acetaminophen) should I give my child?

**Dose of acetaminophen to be given every 4–6 hours, by age or by weight**

1–3 months 6–11 lbs.	4–11 months 12–17 lbs.	12–23 months 18–23 lbs.	2–3 years 24–35 lbs.	4–5 years 36–47 lbs.
1/2 dropperful infant drops*	1 dropperful infant drops*	1 1/2 dropperful infant drops*	2 chewable (80mg) tablets*	3 chewable (80 mg) tablets*
	or	or	or	or
	1/2 teaspoon children's liquid*	3/4 teaspoon children's liquid*	1 teaspoon* children's liquid	1 1/2 teaspoons children's liquid*

\*Consult your pharmacist to be sure you choose the correct dose and formula for your child.

Adapted from the State of California,  
Immunization Branch  
by the Immunization Action Coalition  
1573 Selby Avenue, St. Paul, MN 55104  
(651) 647-9009  
[www.immunize.org](http://www.immunize.org)

Item#P4015 (8/99)

## Vaccine Administration Record for Children and Teens

Patient name: \_\_\_\_\_

Birthdate: \_\_\_\_\_

Chart number: \_\_\_\_\_

Before administering any vaccines, give the parent/guardian all appropriate copies of Vaccine Information Statements (VISs) and make sure they understand the risks and benefits of the vaccine(s). Update the patient's personal record card or provide a new one whenever you administer vaccine.

Vaccine	Type of Vaccine* (generic abbreviation)	Date given (mo/day/yr)	Route	Site given (RA, LA, RT, LT)	Vaccine		Vaccine Information Statement		Signature/ initials of vaccinator
					lot #	mfr.	Date on VIS <sup>§</sup>	Date given <sup>§</sup>	
<b>Hepatitis B<sup>†</sup></b> (e.g., HepB, Hib-HepB, DTaP-HepB-IPV)			IM						
			IM						
			IM						
			IM						
<b>Diphtheria, Tetanus, Pertussis<sup>†</sup></b> (e.g., DTaP, DT, DTaP-Hib, DTaP-HepB-IPV, Td)			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
<b>Haemophilus influenzae type b<sup>†</sup></b> (e.g., Hib, Hib-HepB, DTaP-Hib)			IM						
			IM						
			IM						
			IM						
<b>Polio<sup>†</sup></b> (e.g., IPV, DTaP-HepB-IPV)			IM•SC						
			IM•SC						
			IM•SC						
			IM•SC						
<b>Pneumococcal conjugate (PCV)</b>			IM						
			IM						
			IM						
			IM						
<b>Measles, Mumps, Rubella (MMR)</b>			SC						
			SC						
<b>Varicella (Var)</b>			SC						
			SC						
<b>Hepatitis A<sup>**</sup></b> (HepA)			IM						
			IM						
<b>Influenza<sup>**</sup></b> (Flu)			IM						
			IM						
			IM						
			IM						
			IM						
<b>Other<sup>**</sup></b>									
<b>Other<sup>**</sup></b>									

\*Record the generic abbreviation for the type of vaccine given (e.g., DTaP-Hib, PCV), *not* the trade name.

<sup>†</sup>For combination vaccines, fill in the row for each individual antigen composing the combination.

<sup>§</sup>Record the publication date of each VIS as well as the date it is given to the patient. According to federal law, VISs must be given to patients (or parent/

guardian of a minor child) before administering each dose of DTaP, Td, Hib, polio, MMR, varicella, PCV, or HepB vaccine, or combinations thereof.

<sup>\*\*</sup>Influenza, pneumococcal polysaccharide (PPV23), hepatitis A, and/or meningococcal vaccines are recommended for certain high-risk children.

[www.immunize.org/catg.d/p2022b.pdf](http://www.immunize.org/catg.d/p2022b.pdf) • Item #P2022 (4/03)

Immunization Action Coalition • 1573 Selby Avenue • St. Paul, MN 55104 • (651) 647-9009 • [www.immunize.org](http://www.immunize.org)

## Vaccine Administration Record for Adults

Patient name: \_\_\_\_\_

Birthdate: \_\_\_\_\_

Chart number: \_\_\_\_\_

Before administering any vaccines, give the patient copies of all pertinent Vaccine Information Statements (VISs) and make sure he/she understands the risks and benefits of the vaccine(s). Update the patient's personal record card or provide a new one whenever you administer vaccine.

Vaccine	Type of Vaccine* (generic abbreviation)	Date given (mo/day/yr)	Route	Site given (RA, LA)	Vaccine		Vaccine Information Statement		Signature/ initials of vaccinator
					lot #	mfr.	Date on VIS <sup>§</sup>	Date given <sup>§</sup>	
<b>Tetanus and Diphtheria</b> (e.g., Td)			IM						
			IM						
			IM						
			IM						
			IM						
<b>Hepatitis A<sup>†</sup></b> (e.g., HepA, HepA-HepB)			IM						
			IM						
			IM						
<b>Hepatitis B<sup>†</sup></b> (e.g., HepB, HepA-HepB)			IM						
			IM						
			IM						
<b>Measles, Mumps, Rubella</b> (MMR)			SC						
			SC						
<b>Varicella</b> (Var)			SC						
			SC						
<b>Pneumococcal**</b> (PPV)			IM•SC						
			IM•SC						
<b>Influenza</b> (Flu)			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
			IM						
	<b>Other</b>								
<b>Other</b>									

\*Record the generic abbreviation for the type of vaccine given (e.g., PPV, HepA-HepB), *not* the trade name.

<sup>†</sup>For combination vaccines, fill in the row for each individual antigen composing the combination.

<sup>§</sup>Record the publication date of each VIS as well as the date it is given to the

patient. According to federal law, VISs must be given to patients before administering each dose of Td, MMR, varicella, or hepatitis B vaccine.

\*\*Some high-risk patients need a one-time revaccination with pneumococcal polysaccharide vaccine (PPV).

[www.immunize.org/catg.d/p2023b.pdf](http://www.immunize.org/catg.d/p2023b.pdf) • Item #P2023 (5/03)

Impact of Vaccines in the 20<sup>th</sup> Century

Disease	20 <sup>th</sup> Century Annual Morbidity	2002 Total	% Decrease
Smallpox	48,164	0	100
Diphtheria	175,885	1	>99.9
Pertussis	147,271	9,771	93.3
Tetanus	1,314	25	98.1
Polio (paralytic)	16,316	0	100
Measles	503,282	44	>99.9
Mumps	152,209	270	99.8
Rubella	47,745	18	>99.9
Congenital rubella	823	1	99.8
<i>Haemophilus influenzae</i> (<5 yrs)	20,000 (est.)	187 (serotype B or unknown serotype)	99.1

**Sources:**

1. CDC. Impact of vaccines universally recommended for children – United States, 1900-1998. MMWR 1999;48(12):243-8
2. CDC. Notice to Readers: Final 2002 Reports of Notifiable Diseases. MMWR 2003;52(31):742-50

9/25/03

A

## Reported Cases and Deaths from Vaccine Preventable Diseases, United States, 1950-2002

Year	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1950	5,796	410	486	336	120,718	1,118	33,300	1,904
1951	3,983	302	506	394	68,687	951	28,386	1,551
1952	2,960	217	484	360	45,030	402	57,879	3,145
1953	2,355	156	506	337	37,129	270	35,592	1,450
1954	2,041	145	524	332	60,886	373	38,476	1,368
1955	1,984	150	462	265	62,786	467	28,985	1043
1956	1,568	103	468	246	31,732	266	15,140	566
1957	1,211	81	447	279	28,295	183	5,485	221
1958	918	74	445	303	32,148	177	5,787	255
1959	934	72	445	283	40,005	269	8,425	454
1960	918	69	368	231	14,809	118	3,190	230
1960	617	68	379	242	11,468	76	1,312	90
1962	444	41	322	215	17,749	83	910	60
1963	314	45	325	210	17,135	115	449	41
1964	293	42	289	179	13,005	93	122	17
1965	164	18	300	181	6,799	55	72	16
1966	209	20	235	158	7,717	49	113	9
1967	219	32	263	144	9,718	37	41	16
1968	260	30	178	66	4,810	36	53	24
1969	241	25	192	89	3,285	13	20	13
1970	435	30	148	79	4,249	12	33	7
1971	215	13	116	64	3036	18	21	18
1972	152	10	128	58	3,287	6	31	2
1973	228	10	101	40	1,759	5	8	10
1974	272	5	101	44	2,402	14	7	3
1975	307	5	102	45	1,738	8	13	9
1976	128	7	75	32	1,010	7	10	16
1977	84	5	87	24	2,177	10	19	16
1978	76	4	86	32	2,063	6	8	13

Year	Diphtheria		Tetanus		Pertussis		Polio (paralytic)	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1979	59	1	81	30	1,623	6	22	1
1980	3	1	95	28	1,730	11	9	2
1981	5	0	72	31	1,248	6	10	0
1982	2	1	88	22	1,895	4	12	0
1983	5	0	91	22	2,463	5	13	0
1984	1	0	74	20	2,276	7	9	0
1985	3	0	83	23	3,589	4	8	0
1986	0	0	64	22	4,195	6	10	0
1987	3	1	48	16	2,823	1	9	0
1988	2	0	53	17	3,450	4	9	0
1989	3	0	53	9	4,157	12	10	0
1990	4	1	64	11	4,570	12	6	0
1991	5	0	57	11	2,719	0	9	1
1992	4	1	45	9	4,083	5	6	0
1993	0	0	48	11	6,586	1	3	0
1994	2	0	51	9	4,617	8	8	0
1995	0	1	41	5	5,137	6	6	1
1996	2	0	36	1	7,796	4	7	0
1997	4	0	50	4	6,564	6	7	0
1998	1	1	34	7	6,279	5	2	0
1999	1	1	40	7	7,288	7	2	0
2000	1	0	35	5	7,867	12	0	0
2001	2	0	37	5	7,580	17	0	0
2002	1	NA	25	NA	9,771	NA	0	0

## Appendix A

	Measles		Mumps		Rubella		CRS
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1950	319,124	468	NR		NR		NR
1951	530,118	683	NR		NR		NR
1952	683,077	618	NR		NR		NR
1953	449,146	462	NR		NR		NR
1954	682,720	518	NR		NR		NR
1955	555,156	345	NR		NR		NR
1956	611,936	530	NR		NR		NR
1957	486,799	389	NR		NR		NR
1958	763,094	552	NR		NR		NR
1959	406,162	385	NR		NR		NR
1960	441,703	380	NR	42	NR	12	NR
1961	423,919	434	NR	53	NR	14	NR
1962	481,530	408	NR	43	NR	8	NR
1963	385,156	364	NR	48	NR	16	NR
1964	458,083	421	NR	50	NR	53	NR
1965	261,904	276	NR	31	NR	16	NR
1966	204,136	261	NR	43	46,975	12	NR
1967	62,705	81	NR	37	46,888	16	NR
1968	22,231	24	152,209	25	49,371	24	NR
1969	25,826	41	90,918	22	57,686	29	62
1970	47,351	89	104,953	16	56,552	31	67
1971	75,290	90	124,939	22	45,086	20	44
1972	32,275	24	74,215	16	25,507	14	32
1973	26,690	23	69,612	12	27,804	16	30
1974	22,094	20	59,128	6	11,917	15	22
1975	24,374	20	59,647	8	16,652	21	32
1976	41,126	12	38,492	8	12,491	12	22
1977	57,345	15	21,436	5	20,395	17	29
1978	26,871	11	16,817	3	18,269	10	30
1979	13,597	6	14,255	2	11,795	1	57
1980	13,506	11	8,576	2	3,904	1	14
1981	3,124	2	4,941	1	2,077	5	10

Year	Measles		Mumps		Rubella		CRS
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases
1982	1,714	2	5,270	2	2,325	4	13
1983	1,497	4	3,355	2	970	3	7
1984	2,587	1	3,021	1	752	1	2
1985	2,822	4	2,982	0	630	1	2
1986	6,282	2	7,790	0	55	1	13
1987	3,655	2	12,848	2	306	0	3
1988	3,396	3	4,866	2	225	1	2
1989	18,193	32	5,712	3	396	4	2
1990	27,786	64	5,292	1	1,125	8	32
1991	9,643	27	4,264	1	1,401	1	34
1992	2,237	4	2,572	0	160	1	11
1993	312	0	1,692	0	192	0	4
1994	963	0	1,537	0	227	0	7
1995	309	2	906	0	128	1	3
1996	508	1	751	1	238	0	2
1997	138	2	683	0	181	0	9
1998	100	0	666	1	364	0	9
1999	100	2	387	1	267	0	6
2000	86	1	338	2	176	0	8
2001	116	1	266	0	23	2	3
2002	44	NA	270	NA	18	NA	1

## Appendix A

	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
Year	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1966	32,859	NA	1,497	NA	NR	NR	NR	
1967	38,909	NA	2,458	NA	NR	NR	NR	
1968	45,893	NA	4,829	NA	NR	NR	NR	
1969	48,416	NA	5,909	NA	NR	NR	NR	
1970	56,797	NA	8,310	NA	NR	NR	NR	
1971	59,606	NA	9,556	NA	NR	NR	NR	
1972	54,074	NA	9,402	NA	NR	NR	164,114	122
1973	50,749	NA	8,451	NA	NR	NR	182,927	138
1974	40,358	NA	10,631	NA	NR	NR	141,495	106
1975	35,855	NA	13,121	NA	NR	NR	154,248	83
1976	33,288	NA	14,973	NA	NR	NR	183,990	106
1977	31,153	NA	16,831	NA	NR	NR	188,396	89
1978	29,500	NA	15,016	NA	NR	NR	154,089	91
1979	30,407	129	15,452	260	NR	NR	199,081	103
1980	29,087	112	19,015	294	NR	NR	190,894	78
1981	25,802	93	21,152	394	NR	NR	200,766	84
1982	23,403	83	22,177	375	NR	NR	167,423	61
1983	21,532	82	24,318	438	NR	NR	177,462	57
1984	22,040	77	26,115	465	NR	NR	221,983	53
1985	23,210	80	26,611	490	NR	NR	178,162	68
1986	23,430	65	26,107	557	NR	NR	183,243	47
1987	25,280	77	25,916	595	NR	NR	213,196	89
1988	28,507	70	23,177	621	NR	NR	192,857	83
1989	35,821	88	23,419	711	NR	NR	185,441	89
1990	31,441	76	21,102	816	NR	NR	173,099	120
1991	24,378	71	18,003	912	2,764	17	147,076	81
1992	23,112	82	16,126	903	1,412	16	158,364	100
1993	24,238	95	13,361	1041	1,419	7	134,722	100
1994	26,796	97	12,517	1120	1,174	5	151,219	124
1995	31,582	142	10,805	1027	1,180	12	120,624	115
1996	31,032	121	10,637	1082	1,170	7	83,511	81

Year	Hepatitis A		Hepatitis B		Haemophilus		Varicella	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1997	30,021	127	10,416	1,030	1,162	7	98,727	99
1998	23,229	114	10,258	1,052	1,194	11	82,455	81
1999	17,047	134	7,694	832	1,309	6	46,016	48
2000	13,397	106	8,036	886	1,398	6	27,382	44
2001	10,609	NA	7,843	NA	1,597	NA	22,536	NA
2002	8,795	NA	8,064	NA	1,743	NA	22,841	NA

## Notes

NA - Not Available

NR - Not nationally reportable

CRS: Congenital Rubella Syndrome

Prior to 1966, hepatitis A and B were not separated from other types of hepatitis. Prior to 1978, deaths from hepatitis A and B were not separated from deaths from other types of hepatitis.

Haemophilus (Hi) reporting includes all serotypes and all ages. In 2002, 34 cases of invasive Hi type B disease were reported among children <5 years of age.

Varicella was removed from the nationally notifiable disease list in 1991. In 2002, varicella cases were reported from 19 states and the District of Columbia.

Sources:

Final totals for 2002: *MMWR* 2003;52(31):742-50.

Reportable diseases (1970-2001): Summary of Notifiable Diseases, United States, 2000. *MMWR* 2002;50(53):90-7.

Reportable disease (1950-1970): Earlier editions of Summary of Notifiable Diseases, published annually in *MMWR*.

Deaths: National Center for Health Statistics Mortality Report for respective years.

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22 Sept 2003

**Vaccine Coverage Levels - United States, 1962-2000**

Year	DTP3+	DTP4+	Polio3+	MCV	Hib3+	HebB3+	Combined 4-3-1	Combined 4-3-1-3
1962	67.3							
1963	71.4							
1964	74.6							
1965	72.7							
1966	74.0							
1967	77.9			60.0				
1968	76.8			61.5				
1969	77.4			61.4				
1970	76.4			58.4				
1971	77.8			62.2				
1972	74.1			62.8				
1973	71.7		59.5	61.0				
1974	72.4		60.0	63.4				
1975	73.2		63.6	65.5				
1976	72.7		61.3	66.3				
1977	69.6		62.6	65.0				
1978	66.6		59.5	63.6				
1979	64.4		59.7	66.5				
1980	66.0		58.9	66.6				
1981	68.1		59.2	66.8				
1982	67.1		57.0	67.6				
1983	65.4		56.9	66.3				
1984	65.0		53.2	65.8				
1985	63.6		53.6	61.2				
1986								
1987								
1988								
1989								
1990								
1991	68.8		53.2	82.0			55.0	
1992	83.0	59.0	72.4	82.5	28.2	8.0	68.7	55.3

Year	DTP3+	DTP4+	Polio3+	MCV	Hib3+	Var	HebB3+	Combined 4-3-1	Combined 4-3-1-3
1993	88.2	72.1	78.9	84.1	55.0		16.3	67.1	
1994	93.0	77.7	83.0	89.0	86.0		37.0	75.0	
1995	94.7	78.5	87.9	87.6	91.7		68.0	76.2	74.2
1996	95.0	81.1	91.1	90.7	91.7	16.0	81.8	78.4	76.5
1997	95.5	81.5	90.8	90.5	92.7	25.9	83.7	77.9	76.2
1998	95.6	83.9	90.8	92.0	93.4	43.2	87.0	80.6	79.2
1999	95.9	83.3	89.6	91.5	93.5	57.5	88.1	79.9	78.4
2000	94.1	81.7	89.5	90.5	93.4	67.8	90.3	77.6	76.2

### Notes

MCV: measles-containing vaccine

Var: varicella vaccine

Data prior to 1993 were collected by the National Health Interview Survey and represent 2-year-old children. Data from 1993 are from the National Immunization Survey and represent 19-35 month-old children. Different methods were used for the two surveys. No national coverage data were collected in 1986-1990.

Combined 4-3-1: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, and one or more doses of any measles-containing vaccine.

Combined 4-3-1-3: Four or more doses of DTP/DTaP/DT, three or more doses of poliovirus vaccine, one or more doses of any measles-containing vaccine, and three or more doses of *Haemophilus influenzae* type b vaccine.

Most current publication: CDC. National, state, and urban area vaccination coverage levels among children aged 19-35 months - United States, 2000. *MMWR* 2001;50:637-41.

## VACCINE EXCIPIENT & MEDIA SUMMARY



This section begins with a summary of the excipients included in licensed vaccines in the United States, as of February 2001.

Following the list of excipients is a list of culture media used in the manufacturing process of vaccines licensed in the United States.

All reasonable efforts have been made to assure the accuracy of this information, but manufacturers may change product contents before that information is reflected here.

Excipients Included In U.S. Licensed Vaccines <sup>1</sup>		
Excipient	Use	Vaccine
Aluminum hydroxide	Adjuvant	Anthrax ( <i>BioThrax</i> ), DTaP ( <i>Certiva</i> , <i>Infanrix</i> , <i>Acel-Imune</i> ), DT (Massachusetts), Td (Massachusetts), Hib ( <i>Ped-vaxHib</i> ), Hib-Hepatitis B ( <i>Comvax</i> ), Hepatitis A ( <i>Havrix</i> , <i>Vaqta</i> ), Hepatitis B ( <i>Engerix-B</i> , <i>Recombivax-HB</i> ), Lyme disease ( <i>LymeRix</i> )
Aluminum Phosphate	Adjuvant	DTaP ( <i>Acel-Imune</i> ), DTWP (Massachusetts, BioPort), DT (Wyeth-Lederle), Td (Massachusetts, Wyeth-Lederle), Pneumococcal ( <i>Prevnam</i> ), Rabies ( <i>Bio-Rab</i> )
Aluminum potassium sulfate	Adjuvant	DTaP ( <i>Tripedia</i> ), DTWP (Aventis Pasteur), DT (Aventis Pasteur), Td (Aventis Pasteur)
Amino acids	Growth medium	Hepatitis A ( <i>Havrix</i> ), Typhoid oral ( <i>Vivotif</i> )
Ammonium sulfate	Protein fractionation	Hib ( <i>Act-HIB</i> )
Amphotericin B	Anti-bacterial	Rabies ( <i>RabAvert</i> )
Ascorbic acid	Antioxidant	Typhoid oral ( <i>Vivotif</i> )
Bactopeptone	Growth medium	Influenza (varies seasonally)
Beta-propiolactone	Viral inactivator	Influenza ( <i>Fluvirin</i> ), Rabies (Imovax, <i>RabAvert</i> )
Benzethonium chloride	Preservative	Anthrax ( <i>BioThrax</i> )
Bovine albumin or serum	Growth medium, protein stabilizer	Hepatitis A ( <i>Havrix</i> , <i>Vaqta</i> ), Polio-virus attenuated ( <i>Orimune</i> ), Rabies ( <i>Imovax</i> , <i>RabAvert</i> ), Vaccinia ( <i>DryVax</i> ), Varicella ( <i>Varivax</i> )
Brilliant green	Dye	Vaccinia ( <i>DryVax</i> )
Chlortetracycline	Anti-bacterial	Rabies ( <i>RabAvert</i> ), Vaccinia ( <i>DryVax</i> )
DNA	Manufacturing residue	Hepatitis A ( <i>Vaqta</i> )
Ethylenediamine-tetraacetic acid sodium (EDTA)	Preservative	Rabies ( <i>RabAvert</i> ), Varicella ( <i>Varivax</i> )
Egg protein	Growth medium	Influenza (all brands), Yellow fever ( <i>YF-Vax</i> )
Fetuin (a bovine serum protein)	Affinity ligand for chromatography	DTaP ( <i>Certiva</i> )

## Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines <sup>1</sup>		
Excipient	Use	Vaccine
Formaldehyde, formalin	Anti-microbial, preservative	Anthrax ( <i>BioThrax</i> ), DTaP (all brands), DTwP (all brands), DTwP-Hib ( <i>Tetramune</i> ), DT (all brands), Td (all brands), Hepatitis A ( <i>Havrix</i> , <i>Vaqta</i> ), Hib ( <i>ActHIB</i> ), Influenza ( <i>Fluogen</i> , <i>FluShield</i> , <i>Fluzone</i> ), Japanese encephalitis ( <i>JE-Vax</i> ), Poliovirus inactivated ( <i>Ipol</i> )
Gelatin	Stabilizer in freeze-drying, solvent	DTaP ( <i>Acel-Imune</i> , <i>Tripedia</i> ), Influenza ( <i>Fluzone</i> ), Japanese encephalitis ( <i>JE-Vax</i> ), Measles ( <i>Attenuvax</i> ), Mumps ( <i>MumpsVax</i> ), Rubella ( <i>Meruvax II</i> ), MMR ( <i>MMR-II</i> ), Rabies ( <i>RabAvert</i> ), Typhoid oral ( <i>Vivotif</i> ), Varicella ( <i>Varivax</i> ), Yellow fever ( <i>YF-Vax</i> )
Gentamicin	Anti-bacterial	Influenza ( <i>FluShield</i> )
Glycerin	Solvent	Vaccinia ( <i>DryVax</i> )
Glycine	Protein stabilizer	DTaP ( <i>Acel-Imune</i> ), DTwP-Hib ( <i>Tetramune</i> ), DT (most brands), Td (most brands)
Human serum albumin	Growth medium	Rabies ( <i>Imovax</i> )
Hydrochloric acid	Adjust pH	DTaP (most brands), DT (most brands)
Hydrogen peroxide	Toxin detoxifier	DTaP ( <i>Certiva</i> )
Kanamycin	Anti-bacterial	Lyme disease ( <i>LymeRix</i> )
Lactose	Stabilizer in freeze-drying, filling	BCG ( <i>Tice</i> ), Hib (some packages), Meningococcal ( <i>Menomune</i> ), Typhoid oral ( <i>Vivotif</i> )
Magnesium stearate	Lubricant for capsule filling	Typhoid oral ( <i>Vivotif</i> )
Monosodium glutamate	Stabilizer	Varicella ( <i>Varivax</i> )
Mouse serum protein	Growth medium	Japanese encephalitis ( <i>JE-Vax</i> )
MRC-5 cellular protein	Growth medium	Hepatitis A ( <i>Havrix</i> , <i>Vaqta</i> ), Rabies ( <i>Imovax</i> , <i>RabAvert</i> ), Varicella ( <i>Varivax</i> )
Neomycin	Anti-bacterial	Influenza ( <i>Fluvirin</i> ), Measles ( <i>Attenuvax</i> ), Mumps ( <i>MumpsVax</i> ), Rubella ( <i>Meruvax II</i> ), MMR ( <i>MMR-II</i> ), Poliovirus attenuated ( <i>Orimune</i> ), Poliovirus inactivated ( <i>Ipol</i> ), Rabies ( <i>Imovax</i> , <i>RabAvert</i> ), Vaccinia ( <i>DryVax</i> ), Varicella ( <i>Varivax</i> )
Ovalbumin	Growth medium	Rabies ( <i>RabAvert</i> )
Phenol	Preservative, anti-bacterial	Pneumococcal ( <i>Pneumovax-23</i> ), Typhoid inactivated ( <i>Typhim Vi</i> ), Vaccinia ( <i>DryVax</i> )
Phenol red (phenolsulfonphthalein)	pH indicator, dye	Poliovirus attenuated ( <i>Orimune</i> ), Rabies ( <i>Imovax</i> )
2-Phenoxyethanol	Preservative	DTaP ( <i>Infanrix</i> ), Hepatitis A ( <i>Havrix</i> ), Lyme disease ( <i>LymeRix</i> ), Poliovirus inactivated ( <i>Ipol</i> )

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## Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines <sup>1</sup>		
Excipient	Use	Vaccine
Phosphate buffers (eg, disodium, monosodium, potassium, sodium dihydrogen phosphate)	Adjust pH	DTaP (all brands), DT (most brands), Hib ( <i>Act-Hib</i> ), Hepatitis A ( <i>Havrix</i> ), Hepatitis B ( <i>Engerix-B</i> ), Lyme disease ( <i>LymeRix</i> ), Poliovirus inactivated ( <i>Ipol</i> ), Rabies ( <i>BioRab</i> ), Typhoid inactivated ( <i>Typhim Vi</i> ), Varicella ( <i>Varivax</i> )
Polydimethylsiloxane	Anti-foaming agent	Typhoid inactivated ( <i>Typhim Vi</i> )
Polyethylene glycol p-isooctylphenyl ether (Triton X-100)	Nonionic surfactant (viral inactivation)	Influenza ( <i>Fluzone</i> )
Polymyxin B	Anti-bacterial	Influenza ( <i>Fluvirin</i> ), Poliovirus inactivated ( <i>Ipol</i> ), Vaccinia ( <i>DryVax</i> )
Polyoxyethylene 9-10 nonyl phenol (Triton N-101, octoxynol 9)	Nonionic surfactant (viral inactivation)	Influenza ( <i>Fluvirin</i> )
Polysorbate 20	Surfactant	Hepatitis A ( <i>Havrix</i> )
Polysorbate 80	Surfactant	DTaP ( <i>Acel-Imune</i> , <i>Infanrix</i> , <i>Tripedia</i> ), Influenza ( <i>Fluogen</i> )
Potassium glutamate	Stabilizer	Rabies ( <i>RabAvert</i> )
Silicon	Anti-foaming agent	Lyme disease ( <i>LymeRix</i> )
Sodium acetate	Adjust pH	DT (some brands), Td (some brands)
Sodium bisulfite	Preservative	Influenza ( <i>Fluogen</i> )
Sodium borate	Adjust pH	Hepatitis A ( <i>Vaqta</i> ), Hib-Hepatitis B ( <i>Comvax</i> )
Sodium chloride	Adjust tonicity	Most vaccines, including Anthrax, BCG, Cholera, DTaP, DTwP, DTwP-Hib, DT, Td, Hepatitis A, Hepatitis B, Hib, Influenza, Lyme disease, Pneumococcal, Polio inactivated, Rabies, Typhoid inactivated, Varicella, Yellow fever
Sodium hydroxide	Adjust pH	DT (most brands), Td (most brands)
Sorbitol	Stabilizer, solvent	Measles ( <i>Attenuvax</i> ), Mumps ( <i>MumpsVax</i> ), Rubella ( <i>Meruvax II</i> ), MMR ( <i>MMR-II</i> ), Polio attenuated, Yellow fever ( <i>YF-Vax</i> )
Streptomycin	Anti-bacterial	Influenza ( <i>Fluogen</i> ), Poliovirus attenuated ( <i>Orimune</i> ), Poliovirus inactivated ( <i>Ipol</i> ), Vaccinia ( <i>DryVax</i> [dihydrostreptomycin])
Sucrose	Stabilizer in freeze-drying	Hib ( <i>Act-HIB</i> ), Typhoid oral ( <i>Vivotif</i> ), Varicella ( <i>Varivax</i> )
Thimerosal	Preservative in some multidose containers (see package labeling for precise content)	DTaP (some containers), DTwP (most containers), DT (most brands), Td (most brands), Hepatitis B (some packages), Hib (some packages), Influenza (all brands), Japanese encephalitis ( <i>JE-Vax</i> ), Meningococcal ( <i>Menomune</i> ), Pneumococcal ( <i>Pnu-Imune 23</i> ), Rabies ( <i>BioRab</i> )
Tri(n)butylphosphate	Viral inactivator	Influenza ( <i>FluShield</i> )

### Vaccine Excipient & Media Summary

Excipients Included In U.S. Licensed Vaccines <sup>1</sup>		
Excipient	Use	Vaccine
Vitamins unspecified	Growth medium	Rabies ( <i>Imovax</i> )
Yeast protein	Growth medium	Hepatitis B ( <i>Engerix-B</i> , <i>Recombivax-HB</i> ), Hib ( <i>HibTiter</i> ), Hib-Hepatitis B ( <i>Comvax</i> )

<sup>1</sup> Proprietary names appear in italics.

*References:* Grabenstein JD. Immunologic necessities: Diluents, adjuvants, and excipients. *Hosp Pharm* 1996;31:1387-92,1397-1401.

Grabenstein JD. Clinical management of hypersensitivities to vaccine components. *Hosp Pharm* 1997;32:77-84,87.

## Vaccine Excipient & Media Summary

Vaccine-Production Media <sup>1</sup>	
Vaccine Culture Media	Vaccine(s)
Bovine protein	Pneumococcal ( <i>Pneumovax-23</i> , <i>Pnu-Imune 23</i> ), Poliovirus attenuated ( <i>Orimune</i> ), Typhoid oral ( <i>Vivotif</i> )
Calf skin	Vaccinia ( <i>DryVax</i> )
Chick embryo fibroblast tissue culture	Measles ( <i>Attenuvax</i> ), Mumps ( <i>Mumpsavax</i> ), combination vaccines containing them, Rabies ( <i>RabAvert</i> )
Chicken embryo (fertilized egg)	Influenza (all brands), Yellow fever ( <i>YF-Vax</i> )
Cohen-Wheeler, modified (pertussis components)	DTaP (alternate is Stainer-Scholte media), DTwP (most brands, alternate is Bordet-Gengou media)
Escherichia coli	Lyme disease ( <i>LymeRix</i> )
Human diploid tissue culture, MRC-5	Hepatitis A ( <i>Havrix</i> , <i>Vaqta</i> ), Poliovirus inactivated ( <i>Poliovax</i> ), Rabies ( <i>Imovax</i> ), Varicella ( <i>Varivax</i> )
Human diploid tissue culture, WI-38	Rubella ( <i>Meruvax II</i> ), combination vaccines containing it, Varicella ( <i>Varivax</i> )
Lathman	DTaP ( <i>Infanrix</i> , tetanus component)
Linggoud-Fenton	DTaP ( <i>Infanrix</i> , diphtheria component)
Monkey kidney tissue culture, Cerco-pithecus	Poliovirus attenuated ( <i>Orimune</i> )
Monkey kidney tissue culture, Vero (Vervet or African green monkeys)	Poliovirus inactivated ( <i>Ipol</i> )
Mouse brain	Japanese encephalitis ( <i>JE-Vax</i> )
Mueller-Miller media	Diphtheria and tetanus vaccines (most brands)
Rhesus fetal lung tissue culture	Rabies ( <i>BioRab</i> )
Stainer-Scholte	DTaP ( <i>Infanrix</i> , pertussis component)
Soy peptone broth	Pneumococcal ( <i>Prevnar</i> )
Synthetic/semi-synthetic	Anthrax ( <i>BioThrax</i> ), BCG ( <i>Tice</i> ), DT (all brands), Td (all brands), Hib (all brands), Meningococcal ( <i>Menomune</i> ), Pneumococcal ( <i>Pneumovax-23</i> , <i>Pnu-Imune 23</i> ), Typhoid inactivated ( <i>Typhim Vi</i> )
Yeast or yeast extract	Hepatitis B ( <i>Engerix-B</i> , <i>Recombivax-HB</i> ), Hib ( <i>HibTiter</i> ), Hib-Hepatitis B ( <i>Comvax</i> ), Lyme disease ( <i>LymeRix</i> )

<sup>1</sup> Proprietary names appear in italics.

## Vaccine Excipient & Media Summary Part 2

Excipients Included in U.S. Vaccines, by Vaccine

Vaccine	Contains
Anthrax (BioThrax)	Aluminum hydroxide, Benzethonium chloride, Formaldehyde or formalin, Sodium chloride
BCG (Tice)	Lactose, Sodium chloride
DTaP (DAPTACEL)	Aluminum phosphate, Formaldehyde or formalin, Sodium chloride, 2-phenoxyethanol
DTaP (Infanrix)	Formaldehyde or formalin, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride
DTaP (Tripedia)	Aluminum potassium sulfate, Formaldehyde or formalin, Gelatin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride, Thimerosal*
DTaP (Most brands)	Hydrochloric acid
DTaP/Hib (TriHIBit)	Aluminum potassium sulfate, Formaldehyde or formalin, Gelatin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 80, Sodium chloride, Thimerosal*, Ammonium sulfate, Sucrose
DTaP/HepB/IPV (Pediarix)	2-phenoxyethanol, Sodium chloride, Aluminum, Formaldehyde, Polysorbate 80, Thimerosal*, Neomycin, Polymyxin B, Yeast protein
DT (Aventis)	Aluminum potassium sulfate, Formaldehyde or formalin, Sodium chloride, Thimerosal
DT (Massachusetts)	Aluminum hydroxide, Formaldehyde or formalin, Sodium chloride, Thimerosal
DT (Some brands)	Glycine, Hydrochloric acid, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium acetate, Sodium hydroxide
Hib (ACTHib)	Ammonium sulfate, Formaldehyde or formalin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium chloride, Sucrose
Hib (PcdvaxHib)	Aluminum hydroxide, Sodium chloride
Hib (HibTITER)	Yeast protein, Thimerosal (multi-dose)
Hib (Some packages)	Lactose
Hib/HepB (COMVAX)	Aluminum hydroxide, Sodium borate, Sodium chloride, Yeast protein
Hep A (Havrix)	Aluminum hydroxide, Amino acids, Bovine albumin or serum, Formaldehyde or formalin, MRC-5 cellular protein, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polysorbate 20, Sodium chloride

## Appendix A

Vaccine	Contains
Hep A (Vaqta)	Aluminum hydroxide, Bovine albumin or serum, DNA, Formaldehyde or formalin, MRC-5 cellular protein, Sodium borate, Sodium chloride
Hep B (Engerix-B)	Aluminum hydroxide, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate) , Sodium chloride, Yeast protein, Thimerosal*
Hep B (Recombivax)	Aluminum hydroxide, Sodium chloride, Yeast protein
HepA/HepB (Twinrix)	Phosphate-buffer sodium chloride, Aluminum phosphate, Aluminum hydroxide, 2-phenoxyethanol, Amino acids, Polysorbate 20, Formalin, Thimerosal*, Yeast protein, Neomycin sulfate
Influenza (Fluvirin)	Beta-propiolactone, Egg protein, Neomycin, Polymyxin B, Polyoxyethylene 9-10 nonyl phenol (Triton N-101, octoxynol 9), Sodium chloride, Thimerosal
Influenza (Fluzone)	Egg protein, Formaldehyde or formalin, Gelatin, Polyethylene glycol p-isooctylphenyl ether (Triton X-100), Sodium chloride, Thimerosal
Influenza (FluMist)	Egg protein, Gentamicin, Monosodium glutamate, Sucrose, Potassium phosphate
Influenza (varies)	Bactopeptone
IPV (Ipol)	Formaldehyde or formalin, Neomycin, 2-phenoxyethanol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate) , Polymyxin B, Sodium chloride, Streptomycin
Japanese Encephalitis (JE-Vax)	Formaldehyde or formalin, Gelatin, Mouse serum protein
Measles (Attenuvax)	Gelatin, Neomycin, Sorbitol
Meningococcal (Menomune)	Lactose, Thimerosal*
Mumps (Mumpsvax)	Gelatin, Neomycin, Sorbitol
MMR (MMR-II)	Gelatin, Neomycin, Sorbitol
Pneumococcal (Pneumovax)	Phenol, Sodium chloride
Pneumococcal (Prevnar)	Aluminum phosphate, Sodium chloride
Rabies (Biorab)	Aluminum phosphate, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Thimerosal
Rabies (Imovax)	Beta-propiolactone, Bovine albumin or serum, Human serum albumin, MRC-5 cellular protein, Neomycin, Phenol red (phenolsulfonphthalein), Sodium chloride, Vitamins (unspecified)
Rabies (RabAvert)	Amphotericin B, Beta-propiolactone, Bovine albumin or serum, Chlortetracycline, Ethylenediamine-tetraacetic acid sodium (EDTA), Gelatin, MRC-5 cellular protein, Neomycin, Ovalbumin, Potassium glutamate, Sodium chloride

Vaccine	Contains
Rubella (Meruvax II)	Gelatin, Neomycin, Sorbitol
Td (Aventis)	Aluminum potassium sulfate, Formaldehyde or formalin, Sodium chloride, Thimerosal, (may contain Glycine, Sodium acetate, Sodium hydroxide)
Td (Massachusetts)	Aluminum hydroxide, Aluminum Phosphate, Formaldehyde or formalin, Sodium chloride, Thimerosal, (may contain Glycine, Sodium acetate, Sodium hydroxide)
Typhoid (inactivated – Typhim Vi)	Phenol, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Polydimethylsiloxane, Sodium chloride
Typhoid (oral – TY21a)	Amino acids, Ascorbic acid, Gelatin, Lactose, Magnesium stearate, Sucrose
Vaccinia (DryVax)	Bovine albumin or serum, Brilliant green, Chlorotetracycline, Glycerin, Neomycin, Phenol, Polymyxin B, Streptomycin
Varicella (Varivax)	Bovine albumin or serum, Ethylenediamine-tetraacetic acid sodium (EDTA), Gelatin, Monosodium glutamate, MRC-5 cellular protein, Neomycin, Phosphate buffers (e.g., disodium, monosodium, potassium, sodium dihydrogen phosphate), Sodium chloride, Sucrose
Yellow Fever (YF-Vax)	Egg protein, Gelatin, Sodium chloride, Sorbitol

\*Where “thimerosal” is marked with an asterisk (\*) it indicates that the product should be considered equivalent to thimerosal-free products. This vaccine may contain trace amounts (<3 mcg) of mercury left after post-production thimerosal removal, but these amounts have no biological effect. *JAMA* 1999;282(18) and *JAMA* 2000;283(16).

Adapted primarily from Grabenstein JD. Immunofacts: Vaccines & Immunologic Drugs. St. Louis: Facts and Comparisons, August 2002.

### Essential Public Health Services

*“The individuals who work in public health have entered the field from many professional disciplines—medicine, nursing, law, dentistry, teaching, social work, and even the ministry. When there’s a straightforward task to be done—inspecting restaurants, handing out a WIC voucher, or checking vital signs—it’s easy for everyone to see the purpose of public health and understand it. It’s much harder for staff to understand the “why” of public health—why we give immunizations, why community assessments are important and how all the work of public health is interconnected.”* – Local health department director

The U.S. public health workforce consists of approximately 500,000 individuals currently employed by a range of organizations involved in public health practice including governmental public health agencies, other public sector agencies, health care delivery organizations, voluntary organizations, community-based groups, academia and other entities. The public health workforce is defined less by where they work than by what they do which is to provide essential public health services to communities throughout the nation. The essential services were listed in a statement *Public Health in America* in 1994.

The Public Health Functions Steering Committee, comprised of representatives of several national organizations and federal agencies involved in public health developed *Public Health in America* as a consensus statement “to explain what public health is; clarify the essential role of public health in the overall health system; and provide accountability by linking public health performance to health outcomes.” The statement provides a common vision for public health, “Healthy People in Healthy Communities,” as well as a mission, “To promote physical and mental health and prevent disease, injury and disability.” The **Essential Public Health Services** provides a list of ten public health services which define the practice of public health. (Table 1)

Since 1994, there is momentum around using the Essential Services framework. It has already been proven to be valuable in assessing organizational capacity, job performances and expenditures. There is more work needed to increase the usefulness of this framework. One promising area is the use of the essential services to identify the general knowledge, skills and abilities (i.e., core competencies) that are needed by public health workers regardless of where they work or their specific role, background or programmatic responsibility. Examples of core competencies include epidemiology, health communications/social marketing, community needs assessment and mobilization.

Table 1. Ten Essential Public Health Services

- 1 Monitor health** status to identify community health problems.
- 2 Diagnose and investigate** health problems and health hazards in the community.
- 3 Inform, educate, and empower** people about health issues.
- 4 Mobilize community partnerships** to identify and solve health problems.
- 5 Develop policies** and plans that support individual and community health efforts.
- 6 Enforce laws** and regulations that protect health and ensure safety.
- 7 Link** people **to** needed personal health **services and** assure the provision of health **care** when otherwise unavailable.
- 8 Assure a competent** public health and personal health **workforce**.
- 9 Evaluate** effectiveness, accessibility, and quality of personal and population-based health services.
- 10 Research** for new insights and innovative solutions to health problems.

Public Health Functions Steering Committee, Public Health in America, July 1995.

As one state health director explained: *“Historically, we’ve generally done a good job of tasks like screening children or treating STDs and TB. We haven’t done as well with some other tasks critical to improving the public’s health, because our people lack the skills to convene and talk to community groups, analyze and explain data, sit at a policy table, or assess community needs.”*

It’s been estimated that almost 4 out of 5 public health workers nationwide are under trained in the disciplines of public health. A major challenge in the 21<sup>st</sup> century will be to ensure that all public health workers have access to the training and continuing education needed to perform the essential services. Your participation in the “Epidemiology and Prevention of Vaccine Preventable Diseases” contributes directly to competent delivery of the essential services of public health. As part of the public health team your role is broad and more complicated than just providing personal health services, you are part of helping the community create conditions in which everyone can be healthy.

For additional information: <http://web.health.gov/phfunctions/>